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'Know In Time'**

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Air Conditioning & REFRIGERATION NEWS



Reentered as second-class matter October 3, 1938 at the post office at Detroit, Michigan, under the Act of March 3, 1879.
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**'Written to be
Read on Arrival'**

Issued Every Wednesday
at Detroit, Michigan

FEB. 18, 1942

Vol. 35, No. 7, Serial No. 674
Established 1926.

Household Refrigerator Stocks Frozen by WPB

Locker Storages Can Apply A-10 Rating on Parts

Association Quotes Ruling Received From Hammersley

DES MOINES, Iowa—Refrigerated locker storage plants can obtain repair and maintenance parts and supplies through Preference Rating Order No. P-100, which grants an A-10 priority, according to a bulletin issued Feb. 12 by the National Frozen Food Locker Association, Inc.

This means that the plants can assign an A-10 rating to their order for needed refrigeration repair parts and supplies.

The bulletin sent out by the association stated:

"W. S. Hammersley, chief of the Refrigeration and Air Conditioning Section, Electrical Appliances and Consumers' Durable Goods Branch, War Production Board, Washington, D. C., advises:

"Under Preference Rating Order No. P-100, operators of frozen food locker plants may apply a Preference Rating of A-10 to their purchase orders for repair and maintenance parts and materials, and operators' supplies."

5 Firms Take 'Term' NRSJA Memberships

CHICAGO—Five refrigeration supply jobbing firms have been accepted as "term members" of National Refrigeration Supply Jobbers Association since the announcement in the Dec. 17, 1941 issue of AIR CONDITIONING & REFRIGERATION NEWS that such memberships were open, reports C. E. Borden, president of the association.

Term memberships have been approved for Duncan Supply Co., 937 N. Illinois St., Indianapolis; Fleck Brothers, Ltd., 110 Alexander St., Vancouver, B. C., Canada; Air Conditioning & Refrigeration Supplies, Inc., Charleston, W. Va.; Baltimore Refrigeration Supply Co., Baltimore; (Concluded on Page 16, Column 1)

Plumbing Industry To Standardize Valves

WASHINGTON, D. C.—Plumbing and heating industry has been ordered by WPB to simplify the manufacture of iron, brass, and bronze valves as a way of saving critical materials and disposing of slow-moving inventories.

The order will be followed by a series of amendments requiring simplification of many other items manufactured by the plumbing and heating industry. Manufacturing specifications for these products were said to have been worked out by the Plumbing and Heating branch of the War Production Board after study and discussion meetings with industry representatives and the Bureau of Standards.

Principal purpose of the order is to relieve production lines from the burden of items that are not used generally, and to concentrate on items that are in general demand. (Concluded on Page 16, Column 2)

What Does the Dealer Do Now? Dealers Get Allotment To Sell To April 30

OPA Announces Maximum Prices For Refrigerators

ALL three stock-freezing orders issued thus far (tires, automobiles, and refrigerators) have understandably been sprung as surprises, the secret guarded carefully even from top industry and government executives. It is reported, for instance, that among those surprised by the car-freezing order—and unable to get delivery of automobiles they had ordered—were Larry Fisher, president of Cadillac, and Supreme Court Justice Frank Murphy!

In the household refrigerator business, likewise, the order struck like lightning.

However, dealers who read AIR CONDITIONING & REFRIGERATION NEWS shouldn't have been caught with their pants down. For months the News has been saying that a death sentence had been ordered for the business. In our Jan. 7 issue we predicted that the industry would only be allowed to continue manufacturing household refrigerators during "the first four months of the year" (a forecast that was right on the nose).

And the News has been urging dealers to buy all the refrigerators they could possibly get their hands on. Those who followed this advice are now in much better shape than their competitors. The bulk of the nation's dealers do not each have 100 refrigerators in stock.

Distributors bought numbers of extra copies of the Jan. 7 issue of the News to show to recalcitrant dealers who had been ill-advised by others. In many cases, they were able to stock these dealers at an abnormal rate with the aid of the News.

All that is now water over the dam. Next question: What should dealers do now?

Answer: (1) Build up your service and commercial refrigeration departments, as we have previously suggested. (2) Buy electric ranges. They're due to get the axe soon. Other appliances likewise. Sell all these items you can now—*profitably*, of course—and work for fast turnover. Inasmuch as your days as an appliance *retailer* are numbered, crowd all the business you can into these next few weeks.

What happens when, later in the year, your supply of appliances is exhausted with no hope of re-orders? Answer: Service, plus some new lines of endeavor.

Future issues of the News will discuss these new avenues for your enterprise, and will continue to bring you the latest information from Washington affecting you and your business.

GEORGE F. TAUBENECK,
Editor and Publisher

Information Is Given On Tax Exempt Sales

WASHINGTON, D. C.—Regulations and procedure governing sales of refrigeration equipment and other articles on which exemption from excise taxes may be claimed have been issued recently by Norman D. Cann, acting commissioner of internal revenue, U. S. Treasury Department.

The tax-free sales include equipment sold for the exclusive use of the United States, any state, territory of the United States, or any political subdivision, or the District of Columbia. Also covered are purchases by the United States for disposal to foreign governments under lease-lend arrangements.

Exemptions cover purchase articles, construction articles, and subsidiary articles, but do not apply in any case where the price includes a tax imposed under Chapter 25 or 29 of the Internal Revenue Code. Application of these exemptions is illustrated, in part, by the following examples:

1. A prime contractor producing automobiles for the United States orders the tires needed for such automobiles from subcontractor A, the producer thereof, and also orders generators from subcontractor B, who for the production of the generators orders rubber insulated wire from the producer or subcontractor

There was a question, however, of (Concluded on Page 16, Column 5)

WASHINGTON, D. C.—Manufacturers' and distributors' stocks of household mechanical refrigerators were frozen at 10:00 a.m. Saturday, Feb. 14, by the War Production Board as a preliminary to "some form of rationing."

Manufacturers were told that production of 1942 lines of household refrigerators would be halted April 30, after which the industry would be converted to war production.

The WPB announced that retailers each would be allowed to sell 100 more new refrigerators or a number equal to 1/12 of their total 1941 sales—which ever figure is larger—before the freeze order is automatically applied to retail stocks.

Official interpretation of three questioned points in this order has been obtained by AIR CONDITIONING & REFRIGERATION NEWS, as follows:

1. Question: How many refrigerators will manufacturers be allowed to make between now and April 30?

Answer: They can make a full three months' allotment as ordered under L-5A—in other words, the order is retroactive to Feb. 1.

2. Question: Will distributors be allowed to fill bona fide orders received from dealers prior to Feb. 14?

Answer: No.

3. Question: Will dealers who deliver refrigerators ordered prior to Feb. 14 be allowed to add this number to their quota (or, are such deliveries exempt from quota restrictions)? Answer: No.

Frigidaire's Service Sales Under Sprout



PAUL V. SPROUT

DAYTON, Ohio—Paul V. Sprout has been appointed service sales manager of the Frigidaire division of General Motors Corp., succeeding Virgil A. Hetzel, who died recently following an illness of several months.

Mr. Sprout, who had been assistant service sales manager since 1936, has been connected with Frigidaire's service department since 1927, starting in the technical division. After a year in this division, he was transferred to the organization division until he was appointed office manager in 1932.

During Mr. Hetzel's illness, Mr. (Concluded on Page 16, Column 4)

Radio Industry Faces '100%' Conversion

WASHINGTON, D. C.—Warning that production of radios for civilian use will probably be stopped entirely April 1, when the present WPB order restricting production to 60% of last year's levels expires, was given last week by R. R. Guthrie, head of the Bureau of Industry Branches.

Meeting with representatives of radio set manufacturers, he said that the radio industry was next in line for conversion to war production, and that this would be expected to be accomplished "as rapidly as is technically possible."

While no "deadline" for the industry's conversion to war work was set by Mr. Guthrie in his talk, he implied the task was expected to be completed within three months. He arranged for a series of conferences between WPB representatives and members of the industry's advisory committee at which detailed plans for the conversion will be drawn up.

Declaring that the problems of the radio industry "are at once difficult and pressing," Mr. Guthrie asserted that "we are demanding the utmost of your industry, and of every other industry, now."

"That utmost will mean for some of you a substantial but not entirely unfamiliar task of converting your production to the production of radio, signal corps, detection, and similar (Concluded on Page 16, Column 3)

Radio Broadcasts About Foodstuffs Emphasize Sales Force Prepares For 1942 Campaign

Refrigeration's Part In Holding Vitamin Content

Eastern Scientist Describes Results of Laboratory Tests Demonstrating Value of Low Temperatures

AMHERST, Mass.—Vitamin supplies in food, so essential for good nutrition, are maintained best through refrigeration, warns Dr. C. R. Fellers of Massachusetts State College here, nationally known authority on food who has prepared a talk on vitamins which is being broadcast by 125 radio stations.

After outlining the manner in which vitamins were discovered, Dr. Fellers briefly describes their role in nutrition—chiefly that of acting as regulators for the absorption and utilization of other food components such as fats, sugars, and minerals.

Using the question-and-answer technique, Dr. Fellers then launches into a discussion of the best methods of maintaining the vitamin content of foods, pointing out how important refrigeration is to prevent the destruction of vitamins.

Q. "We can now buy fresh vegetables and fruits the year around in most city markets. Are these shipped in products as rich in vitamins as those locally produced?"

A. "We have made a special study of this point and I can assure you that because of careful handling methods, such as precooling and refrigeration, that this shipped-in produce from the South and West

is every bit as rich in vitamins as the vegetables and fruits grown nearby.

Q. "Then it is your opinion that the storing or holding of foods under refrigeration preserves their nutritive value?"

A. "Oh, yes, very definitely. Our own laboratory experiments, as well as those of other scientists, have shown that a good household refrigerator is very effective in preventing vitamin loss in such foods as lettuce, spinach, broccoli, carrots, strawberries, and even prepared salads. We have found that pressed-out orange juice lost less than 10% of its vitamin C and none of its vitamin A when kept in the refrigerator at 40° F. for as long as 24 hours.

Q. "What about left-overs such as soups, cooked vegetable dishes, and salads—can they be held in the refrigerator for, say, a day or two, and still retain their vitamins and other nutrients?"

A. "Low temperatures retard to a remarkable degree the chemical and microbiological changes in foods. Thus, there is no danger from spoilage, from food poisoning or from appreciable vitamin loss in foods kept at about 40° F. This is the temperature maintained in a good

household refrigerator."

Touching upon the subject of frozen foods, Dr. Fellers answers the question:

"Are frozen foods good sources of vitamins?"

A. "Yes, in general. The kinds that are good vitamin sources when fresh lose relatively little on freezing. We have found that 'as served,' fresh and frozen vegetables are approximately of equal vitamin value. However, one should use caution in defrosting frozen foods, for our experiments show that slow defrosting in the kitchen is very destructive to vitamin C. The frozen food should be cooked while still well frozen or held in the home refrigerator until it is to be cooked."

Refrigeration is also extremely important in the keeping of milk. Dr. Fellers points out in commenting on that universally used food product which has a high vitamin C content.

Q. "I read recently that milk would lose much of its vitamin C if left standing on the doorstep for an hour or two in the sunshine. This doesn't seem reasonable to me."

A. "It didn't seem reasonable to us either until we actually tested it out in our laboratory. Now, we know that the riboflavin in the milk accelerates the loss of vitamin C in sunlight. Of course, the remedy lies in preventing exposure by promptly placing the bottle of milk in the refrigerator."

Q. "Does exposure of leafy vegetables to air result in vitamin loss?"

A. "Yes, especially at summer or kitchen temperatures. The deterioration is twofold, first there is a loss of moisture, which results in varying degrees of wilting, and second, there is an actual loss of vitamin C which is proportional to the moisture loss. Thus, we see how important it is to store fresh leafy vegetables in a cool, moist place. Even at cellar storage temperatures considerable vitamin loss occurs."

Q. "What do you think of the new 'humidifier' compartments in refrigerators for the purpose of preventing evaporation in succulent fruits and vegetables?"

A. "Not only do these humidifier compartments in the refrigerator prevent drying out of vegetables and fruits, but they aid in conserving vitamins to a remarkable degree. In other words—keep your vegetables moist and cool, and the vitamins will take care of themselves."

Q. "My, there is much more to the subject of vitamins than I ever thought of. In conclusion, Dr. Fellers, will you give us laymen a parting word of advice?"

A. "In summarizing, I think that it is worth repeating that all exposure of fresh or cooked foods to warmth, dehydration, and air should be avoided. Keep foods moist and cool. Cook vegetables rapidly with as little water as possible and save the juice. Cultivate the habit of using a greater variety of foods. There is safety in such a varied selection. Make sure to make liberal use of the so-called protective foods, milk, eggs, and fruits and vegetables. Use enriched flour and bread as well as vitamin D milk where possible. Finally, after having selected one's food from the standpoints of variety, quantity, and quality, let's quit worrying about vitamins and enjoy our food!"



When district sales managers of the Crosley Corp., gathered in Cincinnati from all parts of the country, they brought to Vice President and General Sales Manager Robert I. Petrie reports of outstanding consumer interest in every sales district. In the group shown above, Vice President Petrie is discussing with the district managers

plans for 1942 sales campaigns. Other speakers, standing in the rear, who also addressed the district managers, are, left to right: Ben T. Roe, distribution manager; L. Martin Krauter, advertising and sales promotion manager; and J. H. Rasmussen, radio division manager.

Cheyenne Dealers In Appliances Making One Delivery Daily

Salesmen Beat Mark In Contest So Boss Can Have a Trip

MEMPHIS, Tenn.—Sometime during his career every salesman has a spurt of energy to try to achieve his ambition to win that bonus or button or radio that is the reward for highest sales during the month in his company.

But it's an entirely different—and unusual—story when the salesmen stage their own contest to win a prize, not for themselves, but for "the boss." And that is what the nine salesmen of the Wallace Johnston Co., G-E appliance dealership here, decided to do in December.

Doing a complete about-face from the usual salesmen contest theme of appliance merchandising, each man was required to sell one G-E washing machine, a deluxe model selling at \$100, during the month to register a 100% turnover qualifying Wallace Johnston, president of the firm, for the manufacturer's trip-award. The requisite nine washing machines were all sold within 11 days after the start of the contest.

And New Year's Day saw Mr. Johnston enjoying himself at the Sugar Bowl football game with all expenses paid.

C.J. Camp Leaves Norge Distributor For Navy

WASHINGTON, D. C.—Chauncey J. (Joe) Camp, for several years associated with the sales staff of the Washington office of Southern Wholesalers, Inc., Norge distributor, has taken a leave of absence to re-enter the United States naval service, where he has been commissioned a lieutenant-commander. A graduate of the U. S. Naval Academy, Mr. Camp before joining Southern Wholesalers was with Lincoln Sales Corp.

Tom Gray, formerly in the Baltimore office of Southern Wholesalers, has been transferred to the Washington headquarters to contact downtown appliance accounts.



Washington at Valley Forge—where Virginia's greatest Native Son inspired the remnants of his tattered army to endure through the rigors of a cruel winter—men united in sacrifice for a common cause.

VIRGINIA—a name that has earned respect

Today the Nation's victory effort demands of our industry, as of all industry, that for the duration the policy of "business as usual" be set aside—that we of the Refrigeration Industry unite in all-out service of the same common cause—TO WIN!



"VIRGINIA" REFRIGERANTS
AGENTS FOR KINETIC'S "FREON-12"
VIRGINIA SMELTING CO.
WEST NORFOLK, VIRGINIA



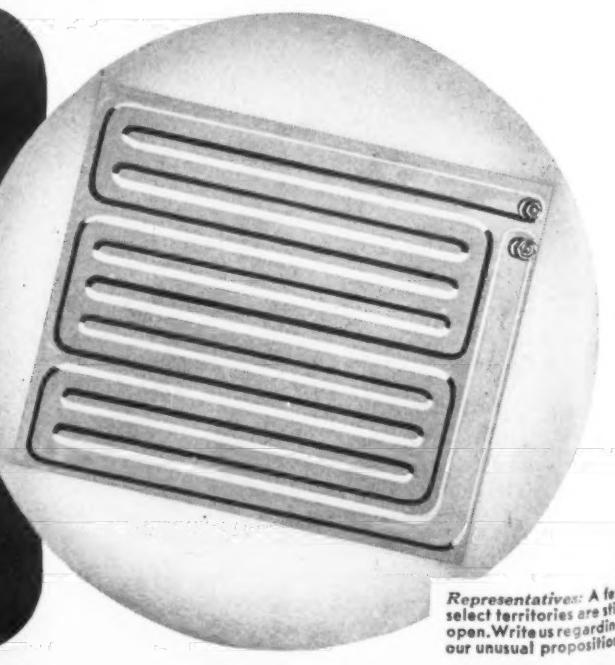
FOR TOP-VALUE AND ECONOMY Specify STANGARD COLD PLATES

In these days efficient, uninterrupted production schedules are vastly important to the National Defense. For this reason, it will pay you to specify STANGARD Prime Surface Cold Plates... they are soundly engineered... precision manufactured... low in first cost and maintenance. For maximum efficient refrigeration for Locker Plants, Sharp Freezing, Ice Cream Cabinets, Hardening Rooms, Soda Fountains, Storage Rooms, Milk Coolers, Liquid Cooling and Food Counters specify Stangard Prime Surface Cold Plates.

Write today for full information

Standard-Dickerson Corp.

46-76 Oliver Street Newark, New Jersey



Representatives: A few select territories are still open. Write us regarding our unusual proposition.

Group of Employees May Try To Buy E.T.L. Properties

NEW YORK CITY—Properties of the Electrical Testing Laboratories, one of the oldest and best known organizations of its kind in the country, have been offered for sale, according to announcements recently on the financial pages of New York City newspapers.

According to the announcements, ETL has "voluntarily dissolved," but no further explanation was given. All inquiries regarding the property are to be directed to W. H. Sawyer, 30 Broad St., New York City.

The organization has been maintained principally by electric utility companies who have utilized its facilities in testing and developing various types of electrical equipment. Employees of the company, it is understood, are forming a corporation through which they have made an offer to purchase ETL properties, with the purpose of operating it as an employee-owned independent testing laboratory, and of initiating a new testing activity which would be rendered by the ETL staff with the same equipment as heretofore.

Organized in 1896, the organization was first known as the Lamp Testing Bureau, with headquarters in Harrison, N. J.

Refrigerator Average Price Up, Appliances Down In Knoxville

KNOXVILLE, Tenn.—Although sales of electric refrigerators in the Knoxville territory during 1941 fell more than 400 units below the 1940 mark, average sales price increased \$12, enough to bring dealers' dollar volume to approximately the same figure as that of the preceding year, according to Knoxville Electric Power & Water Board statistics.

Refrigerator sales totaled 4,386 units in 1941, compared with 4,824 in 1940, but average sales price was \$151, as against \$139 in the preceding year, so that refrigerator dollar volume was \$660,739, compared with \$671,382 in 1940.

Range sales rose to 2,507 units in 1941, at an average price of \$143, against 2,302 units at an average of \$144 in 1940; while water heater sales hit 1,302 units at a \$75 average against 848 at \$83 in the preceding year. Volume of all household appliance sales in the area was \$2,100,248 last year, against \$2,126,196 in 1940.

December dealer sales included 80 household refrigerators at an average of \$174 per unit, 96 ranges at a \$156 average, 35 water heaters at \$93, 147 washers at \$74, 16 ironers at \$99, 1,904 radios at \$36, and—indicating perhaps a "substitute" appliance trend—111 electric sewing machines at an average price of \$97.

Eight commercial refrigerators at an average price of \$888, and two milk coolers at \$425 each also were sold in December.

Following are comparative sales and average prices for 1940 and 1941:

Residential	Units	Price	Units	Price
Refrigerators	4,386	\$ 151	4,824	\$ 139
Ranges	2,507	143	2,302	144
Water Heaters	1,302	75	848	83
Washers	3,141	78	3,018	78
Ironers	138	84	102	82
Cleaners	594	60	1,572	67
Radios	7,817	37	8,530	36
Dishwashers	18	170	16	174
Disposal Units	6	144	4	156
Room Coolers	6	392	..	..
Commercial				
Refrigerators	168	667	144	670
Ranges	16	184	9	236
Water Heaters	22	73	21	91
Milk Coolers	7	321	5	235
Air Condition.	12	2,044	23	2,403

Simon, Distributor, Gets OPA Headquarters Job

WASHINGTON, D. C.—James H. Simon of Washington, D. C. has been named principal industrial specialist in the consumers' durable goods section of the Office of Price Administration, reports J. K. Galbraith, assistant administrator.

Mr. Simon, who for 14 years was president of the Simon Distributing Corp., Washington, will be chief of the unit in charge of radios, batteries, and musical instruments.

6 Point Program of 'Fundamentals' Suggested For Dealers Now

PITTSBURGH—A six-point program of "fundamentals" has been suggested to dealers by West Penn Power Co. to serve as a guide in planning their individual activities during the period of appliance shortages.

They are:

1. Carry ample stocks of available equipment. Some deliveries are slow, and it is wise to avoid stock shortages wherever possible.

2. Sell aggressively. Even though some lines may not be available at times, sell what you have and can get—and don't depend on customers to walk in and buy.

3. Sell at a profit. The restrictions on credit are a boon, and there is no need to sacrifice profits in excessive trade-in allowances.

4. Sell service. Recognize the growing need and importance of appliance service, and be prepared to handle it well. Efficient repair

service will not only return a profit, but will also keep and make friends that will lead to future business.

5. Keep flexible. Be prepared to change your operation quickly to meet new conditions as they arise.

6. Control costs. Keep a tight rein on costs—examine your expenses closely—eliminate unnecessary expense—make the business return a net profit.

"While the situation today, and its implications of the future, are different than any which merchants have met in the past, the problems are no more difficult," the company declares.

"And some of the brightest chapters in the nation's history are composed of the achievements of retailers in meeting adverse conditions," the statement continues.

"No one welcomes adversity, but it need never be accepted as unconquerable."

Air Conditioning Men Plan Maintenance Clinic

BUFFALO—Air conditioning authorities will speak to commercial and industrial plant engineers and maintenance men at a meeting on Feb. 25 under the auspices of the Air Conditioning Council of Western New York, Sherman W. Strouse, vice president of the Council, announced.

"With many properties in this area equipped with air conditioning facilities, their care and operation, especially under emergency conditions, become a matter of vital concern at this time," Mr. Strouse stated.

The Council is also preparing recommendations for adequate ventilation of air raid shelters.

Southwestern Sales Moves

DALLAS, Tex.—Southwestern Sales & Warehouse Co., distributor here for Thor laundry equipment, has moved to new and larger quarters at 4110 Ross Ave.

'Bright Work' Ban Is Placed on Appliances

WASHINGTON, D. C.—The limitation order restricting the production of domestic cooking appliances has been amended by substituting a prohibition against fabrication of "bright work" parts using copper, nickel, chromium, or aluminum for the previous flat prohibition against the use of any such parts, even if already fabricated.

Limitation Order L-23, which restricts the use of iron and steel in the manufacture of a wide variety of stoves, ranges, and other domestic cooking appliances during the period Jan. 1 to April 30, banned the use after Feb. 1 of any "bright work."

Many of these parts already have been fabricated, and could serve no useful purpose elsewhere if manufacturers were denied the right to use them. In lifting the ban so that inventories can be exhausted, the War Production Board ruled that no critical materials can be processed to increase these inventories.



...BLIND MAN'S BUFF IS NO FUN FOR FROZEN FOOD SHOPPERS

Profitable Visual Selling needs L·O·F Thermopane!



● Shoppers seldom buy what they can't see. And they can't see Frozen Foods kept in "blind" cases—cases without glass display panels.

For better selling through better display, more and more frozen food cases are being glazed with clear, sparkling plate glass. And 9 OUT OF 10 of these glazed cases use Libbey-Owens-Ford Thermopane.

Reason number one is that Thermopane doesn't fog up. The air locked between the hermetically sealed panes is absolutely dry and stays dry. There is no condensation between panes.

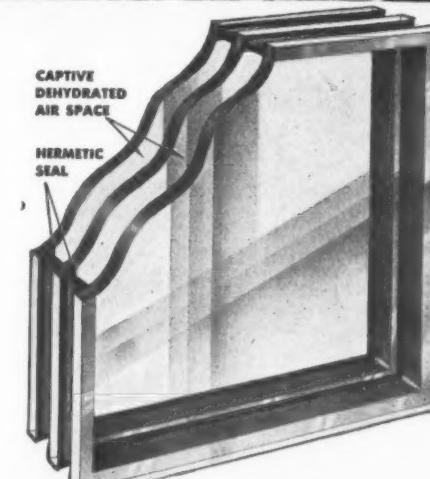
Reason number two is that Thermopane is quicker and easier to install. Here's why. Instead of two, three or more individual panes there is but a single glass unit. Cabinets can be glazed in one-sixth the time it takes the old way.

The glass in Thermopane units is sparkling clear Libbey-Owens-Ford Plate Glass. Inside surfaces are bright and clean and stay that way. And because there is no breathing action and no moisture between the panes, you get the high insulating efficiency of still, dry air.

Don't make shoppers play "blind man's buff". Use Thermopane for better seeing, better selling, in frozen food cases—and other commercial refrigerators.

GET COMPLETE INFORMATION

For full information about Thermopane glass and for technical advice on its applications in their cabinets, manufacturers of commercial refrigerators are invited to write Libbey-Owens-Ford Glass Company, 1330 Nicholas Building, Toledo, Ohio.



AN AIR-CONDITIONED SANDWICH. Thermopane is a glass unit consisting of two, three or more panes of glass, separated by $\frac{1}{16}$ inch or $\frac{1}{8}$ inch of captive dehydrated air, and sealed by an air-tight metal seal.

Shipped to refrigerator manufacturers ready to install.



6 CASES CAN BE GLAZED IN THE TIME IT TAKES

TO DO 1 THE OLD WAY

Where it formerly took six hours to glaze a cabinet in a certain plant, it now takes but one with Thermopane units. Much time is saved by the elimination of cleaning and polishing between panes. Thermopane is supplied already clean, ready to install.



LIBBEY·OWENS·FORD
Thermopane
"Better Seeing Means Better Selling"

Kelvinator's 'Top Two' For '42



Here are two leading models of Kelvinator's 1942 electric range line—the deluxe ER-429, featuring the new Kelvin-Maid, and (right) the ER-427, featuring "built-in" timing equipment.

'Kelvin-Maid' Leads New Range Features

DETROIT—Kelvinator's new 1942 line of electric ranges has been designed to give maximum value to the user in terms of food conservation, economy of operation, and the release of more homemaker hours for civilian defense work. Leading features include the "Kelvin-Maid," seven-speed surface units, and new concealed oven vents.

There are four basic models in the 1942 series, arranged in step-up fashion, and priced from \$117.95 to \$214.95.

Headline feature is the Kelvin-Maid, a device that starts, times, and stops cooking operations automatically. The housewife simply places the food in the oven, sets the automatic controls—and goes her way. The meal will be ready at the appointed hour.

This feature consists of an electric

clock, master cooking timer, selector switch, Minute-Timer, and twin appliance outlets in a trim panel under a streamlined fluorescent top light.

Price leader in the line is the ER-421, which is priced at \$117.95 delivered in the kitchen anywhere east of the Rockies, and has the basic features common to all of the new Kelvinator ranges.

Body is constructed of rigid one-piece welded steel, with welded internal braces, and one-piece steel cooking platform and backguard. It has a toe-room base. Finish is of porcelain enamel inside and out, with everything white except the inside surfaces, back, and base, which are black. Cooking platform and backguard are acid-resistant, and the working surface covers 400 square inches. The capacious utility drawer is on easy-operating roller bearings.

Ring or rod type surface units are available, with non-warping rigid supports. One is an 8-inch, 2,000-watt unit; the two others are 6½-inch, 1,200-watt units. They are controlled by seven-speed, bi-rotary

silver-contact switches with white plastic knobs, mounted on a recessed, inclined panel on the range front.

The oven is of the two-unit type, with a 3,000-watt top unit and a 2,400-watt bottom unit, designed to perform all baking, broiling, and roasting operations. The oven is fully insulated with Fiberglas and the black porcelain enamel lining is of welded, one-piece construction, with rounded corners. A concealed vent assures precise heat and moisture control.

SCOTCH KETTLE ON ALL

Common to all the new models is the Scotch Kettle, useful for cooking inexpensive cuts of meat and providing low temperatures for meals that require long cooking. A complete meal can be cooked in this 6-quart, deep-well cooker for a current cost of about 2 cents, it is claimed.

The next model, ER-421-A, has all the features of the ER-421, plus top-light, combination oven timer, Minute-Minder, and condiment set.

Succeeding step-up is to the ER-423-C, which complements all the features of the ER-421-A with two extra utility drawers and oven and switch lights to meet the need for "stepped-up" appearance and extra convenience. The fourth new Kelvinator model is the ER-427 with a combination oven timer and Minute-Minder built into the graceful, high backsplash.

It has, in addition, three roomy utility drawers mounted on ball-bearing rollers, individually floodlighted surface unit switches, and an automatic oven floodlight, with heat resisting glass lens, recessed in the oven back.

'KELVIN-MAID' MODEL

At the top of the line, selling at \$214.95, is the deluxe ER-429, featuring the Kelvin-Maid. In this model, cooking is made easier by individually lighted switches; fluorescent top light that does away with eye-tiring shadows; ball-bearing utility drawers; timer-controlled twin outlets for plugged-in appliances, such as percolators or toasters; one-piece porcelain top that has 400 square inches of smooth, handy working space.

Cooking is made better by such features as seven-speed surface units, with direct contact between unit and utensil; the deluxe Scotch Kettle; the oversize, two-unit oven; an automatic pre-heat cut-off that pre-heats the oven rapidly, then saves current after baking temperature has been reached; a controlled heat warmer drawer for keeping foods at the right temperature until time to serve.

Nema Sales Total 106,227 in December

The following 10 companies reported sales to the Refrigeration Division of the National Electrical Manufacturers Association (Nema) on household electric refrigerators for December, 1941:

Crosley Corp., Edison General Electric Appliance Co., Inc., Frigidaire Div. General Motors Corp., General Electric Co., Gibson Electric Refrigerator Corp., Nash-Kelvinator Corp. (includes sales of

Kelvinator and Leonard), Norge Div. Borg-Warner Corp., Stewart-Warner Corp. (includes sales of Gale Products as of Nov. 1, 1941), Sunbeam Electric Mfg. Co., and Westinghouse Electric & Mfg. Co.

The sales of the reporting companies include units manufactured for the following concerns: Montgomery Ward & Co., Potter Refrigerator Corp., and Sears, Roebuck & Co.

SALES FOR DECEMBER, 1941

	Domestic	Canadian	Other Foreign	Total World
Lacquer (Ext.) Cabinets Complete				
1. Less than 4 cu. ft.	665	...	396	1,061
2. 4 to 4.99 cu. ft.	7,839	137	1,169	9,145
3. 5 to 5.99 cu. ft.	0†	15	15	15
4. 6 to 6.99 cu. ft.	39,370	1,299	1,147	41,816
5. 7 to 7.99 cu. ft.	29,378	...	748	30,126
6. 8 to 8.99 cu. ft.	5,771	11	361	6,143
7. 9 to 12.99 cu. ft.	2,394	...	293	2,687
8. 13 cu. ft. and up.	10	...	...	10
9. Total Lacquer	85,427	1,462	4,114	91,003
Porcelain (Ext.) Cabinets Complete				
10. Less than 5 cu. ft.	...	...	...	...
11. 5 to 5.99 cu. ft.	1,696	...	86	1,782
12. 6 to 6.99 cu. ft.	2,347	...	7	2,354
13. 7 to 7.99 cu. ft.	1,589	...	33	1,622
14. 8 to 8.99 cu. ft.	328	...	153	481
15. 9 to 12.99 cu. ft.	400	...	9	409
16. 13 cu. ft. and up.	...	...	...	...
17. Total Porcelain	6,360	...	288	6,648
18. Total—Lines 9 and 17	91,787	1,462	4,402	97,651
19. Separate Systems, ¼ Hp. or Less...	...	...	8,576	8,576
20. Total Household Equipment	91,787	1,462	12,978	106,227
Value Index*	112.0	149.0	120.0	113.0

*Based on weighted sales for 1934, 1935, and 1936. †Includes sales and credits.

Gain For 1941 Is A Million Units

DETROIT—The household electric refrigerator industry wound up 1941 with a gain of more than a million units over 1940. World shipments last year aggregated 3,744,000 units, as against 2,720,000 in 1940, according to estimates by AIR CONDITIONING & REFRIGERATION NEWS.

December shipments fell below the corresponding month of 1940, the first time this occurred last year, totaling an estimated 112,000 units, against approximately 123,000 in 1940.

World shipments by manufacturers reporting to National Electrical Manufacturers Association totaled 3,490,769 units last year, as compared with a world total of 2,676,435 units in 1940. Shipments by Nema firms to distributors and dealers in the

United States and possessions alone totaled 3,301,821 units last year, against shipments of 2,528,566 units to corresponding firms during 1940.

For December, world shipments by Nema members were 106,227 units, compared with 115,748 in 1940.

New York led the United States in purchases during 1941, with 352,516 units, more than 10% of the total.

Washer Shipments At New Peak

CHICAGO — Household electric washer shipments hit a new all-time peak of 1,959,887 units, an increase of 26.2% over the 1,552,666 in 1940, and 13% above 1936, the previous high washer year, according to figures released by American Washer & Ironer Manufacturers Association.

December washer shipments were 113,054, an increase of 22.2% over the 1940 total of 92,474 units for the month.

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FIN COILS
MODULATOR

Beware of Sabotage
TO OUR FOOD SUPPLY

DANGER lurks in the bacteria which causes food decay and spoilage—danger to our nation's cause. And there's one sure weapon against these hidden enemies—modern, efficient refrigeration. There's nothing startlingly new about that fact, but never in our history has it been so important.

Food is one of the most important munitions of modern war. America is now engaged in the greatest food production program of all times. Spoilage now is worse than waste—it's an unpatriotic aid and comfort to the enemies of our country.

Refrigeration service men are therefore engaged in a vital battle of this war—to save our food, to keep it safe and wholesome. To you, Penn offers the utmost co-operation consistent with our direct obligations to the armed forces.

Penn refrigeration controls will play a big part in keeping America's commercial refrigeration equipment operating efficiently, economically, dependably. For new installations as well as maintenance and repairs, choose from our complete line. **Penn Electric Switch Co., Goshen, Ind.**



*Includes sales and credits.

Locker Plant For the Rich**Wealthy St. Louis Suburbanites Lease****Lockers For Game and Prime Meat Cuts****'Delivery' Required From Locker Room To Lounge**

ST. LOUIS—Possibly one of the most unusual locker plants in the country today is the one in Ladue Village here operated by Walter Hensley, Jr.—for instead of operating on an "economy" basis as do most such plants, the Ladue installation, in the center of St. Louis' wealthiest suburb, has as customers families who use the locker plant's facilities only as a means of insuring that their meats are the best that money can buy.

Ladue Locker Plant is a 317-locker installation, with equipment purchased from Hussmann-Ligonier and installed by City Refrigeration Service Co. of St. Louis. To match the expensively constructed estate homes surrounding it, the building is done in Williamsburg Colonial style with a white colonnade exterior, diamond windows, and storm lanterns which completely disguise its practical usage. Directly back of the entrance is a period-furniture waiting room and the meat cutting shop, where customers can watch their meats cut as wished.

Two types of locker rental plans are offered, including \$12.50 per year for a 4½ sq. ft. locker, and \$15 for a 6½-foot drawer type which will accommodate approximately 275 pounds of meat. The plant is powered by a W-500 MS Hussmann compressor for the locker space, and a W-150 MS 1½-hp. compressor for the sharp freezer room to the right of the meat shop. Since its completion the first of October, the plant has already enlarged by another 100 lockers, according to Joseph Pfister, plant manager.

ASSURES MEAT SUPPLY

Customers using the locker plant are for the most part in income brackets of \$20,000 or over, and instead of working on an economy plane, the Ladue plant has done 90% of its business with wealthy customers who enjoy prime grades of beef and other meats, buy large quantities, and keep it in storage.

"Only a few stores in the Middle West handle beef of this quality," Mr. Pfister, who has been in the meat business 18 years, pointed out, "and people who know meat quality thoroughly are turning to the locker storage idea as the only practical means of insuring that the choicest steaks, roasts, etc. will be on their tables the year around."

The average meat market will chill and age beef only 10 days or so through the need for turnover, Mr. Pfister explained, whereas much longer periods are required to provide the flavor and "body" which the gourmet-type of diner demands. Consequently, the Ladue plant orders prime meats for 80% of its customers on a regular schedule, keeping them always in perfect condition, and traveling to all packers in the area if necessary to buy the correct grades.

Frozen Poultry Ends 'Feel & Guess' Buying

KANSAS CITY, Mo.—Rapid development, during the past 10 years, of the quick-freezing process has revolutionized poultry merchandising by making possible the widespread distribution of cleaned and drawn poultry, said Donald Barr, marketing manager of Frosted Foods Sales.

In addition to building higher quality standards, quick-frozen, packaged birds help the producer and retailer by setting up recognized brands.

For the housewife, quick-frozen poultry eliminates the "feel and guess buying methods" formerly necessary, and permits buying of all kinds of poultry at all times of the year, cleaned, washed, and singed, the speaker said. However, he added, housewives must be educated to understand that, despite the apparent difference in price between undrawn and ready-to-cook birds, she actually is getting as much or more for her money when she buys the quick-frozen, eviscerated product.

Army Expert Sees Soldier Diet Boosting Use of Locker Storage Facilities

ST. LOUIS—The increased emphasis on fresh fruits and vegetables in the U. S. soldier's diet, with a consequent reliance on modern quick-freezing and storage equipment, will result in a demand for both frozen foods and locker storage plants that will move these fields ahead rapidly in the post-war period. Col. R. A. Osmun, of the Army quartermaster corps, declared in an address to the American Dietetics Association.

Speaking on "Army Food and the Future," Col. Osmun asserted that eating habits now being taught in the Army not only would have important effects on future methods of food preservation and processing, but that it would also diversify the country's entire farming effort in that one-crop farmers would of necessity keep a herd of dairy cows or raise more fruits and vegetables to meet the new demand.

"I imagine that the locker system now in use in some cities will be used in every small town and hamlet in the not too distant future," the speaker said, "so that anyone can rent a refrigeration locker and keep meats and vegetables in it until he is ready to use them."

"Probably some enterprising engineer will turn out cheap family lockers which will become a necessity in every home, just as the ice box is today. Or maybe the ice box companies will put out an inexpensive combination unit, part of which keeps foods cold, and the other part of which freezes the fruits, vegetables, but poultry, butter, cheese, and eggs as well."

All food buying is coordinated through a central headquarters in Chicago, through which all commercial fruits, vegetables, poultry, and dairy products move through regular marketing channels. Through this centralized system, Maj. Kearney

said, supplies can be purchased at the best possible price and shipped directly to the point at which they are needed. Policy is to buy as closely as possible to the spot at which the food will be eaten.

More than \$2,000,000 worth of fresh fruits, vegetables, and other produce is being purchased monthly for Army use, the speaker said, and by better marketing, more supplies can be purchased at a lower price, and nutrition standards are raised. In the transportation of these foodstuffs, modern refrigeration plays an important part, just as it does in the ordinary commercial food transportation field.

To make certain that the Army is being fed properly, master menus are prepared in each corps area, 60 days in advance, and are sent to the subsistence branch of the Quartermaster General's office for analysis and comments as to their quantity, quality, variety, cost, practicality, and nutritive value. Menus are made up in quantities needed for 100 men, and may differ in various parts of the country, according to the supply of locally available fruits and vegetables, as well as the dietary idiosyncrasies of troops from various sections of the country.

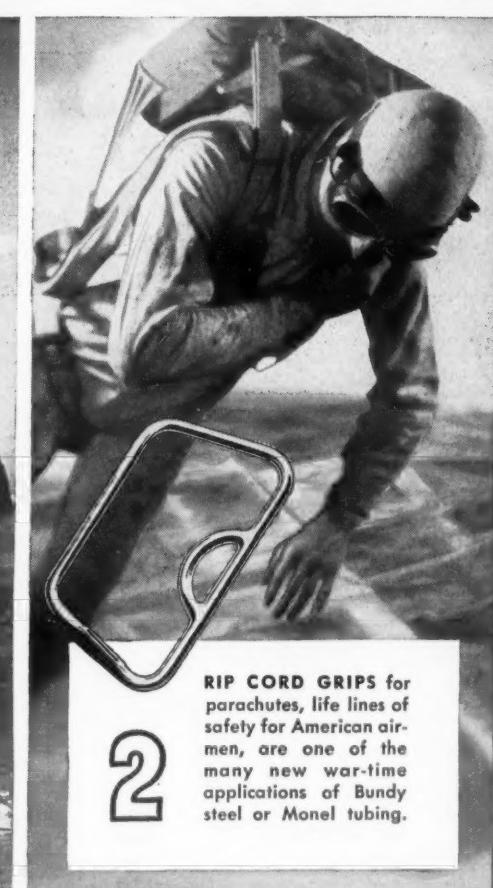
A series of monthly model menus are now being prepared in Washington for the guidance of the officers in charge of menu making in the various corps areas, Maj. Kearney said, and their adoption in the same or substantially unchanged form will be recommended, because they furnish variety along with an ample provision of nutrients.

Fifty-one cooks and bakers schools are now engaged in training some 68,000 men in proper methods of modern cooking and baking.

FAMOUS LIFE LINES

1

THE STRAITS OF GIBRALTAR, life line of British domination in the Mediterranean, are protected by the fortress on "The Rock," British warships in the harbor and patrol planes overhead.



2

RIP CORD GRIPS for parachutes, life lines of safety for American airmen, are one of the many new war-time applications of Bundy steel or Monel tubing.

International

Underwood & Underwood

PARACHUTE rip cord grips, ground flare stabilizer tubes, telescopic aerials for "walkie-talkies" and field radio sets—these are just a few of the many new and unusual armament applications of Bundy tubing.

Diesel power plants of submarines and minesweepers have fuel and lubrication lines of Bundy tubing. Aircraft and marine engines use Bundy tubing for primer lines. And, of course, all types of military self-propelled vehicles—tanks, trucks, half-tracks, "jeeps," staff cars, motorcycles—use Bundy tubing for lubrication, fuel or brake lines just as in their peace-time prototypes.

The extensive war-time uses of Bundy tubing are not surprising, nor are they accidental. For armament manufacturers, in their peace-time operations, have long recognized Bundy tubing as standard for strength, for ductility, for resistance to vibration fatigue and for ease of fabrication.

If you use tubing in or near Bundy's range of sizes, Bundy can probably help you with your tubing problems. The experience of Bundy's Research and Engineering Departments are at your disposal. Bundy Tubing Company, Detroit, Michigan.

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Trade Mark registered U. S. Patent Office; Established 1926 and registered as Electric Refrigeration News

F. M. COCKRELL, Founder

Published Every Wednesday by BUSINESS NEWS PUBLISHING CO. 5229 Cass Ave., Detroit, Mich. Telephone Columbia 4242

Subscription Rates
U. S. and Possessions, Canada, and all countries in the Pan-American Postal Union: \$4.00 per year; 2 years for \$7.00. All other foreign countries: \$6.00 per year. Single copy price, 20 cents. Ten or more copies, 15 cents each; 50 or more copies, 10 cents each. Send remittance with order.

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Member, Audit Bureau of Circulations
Member, Associated Business Papers

VOLUME 35, NO. 7, SERIAL NO. 674
FEBRUARY 18, 1942

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Refrigeration Will Help Win the War

Big Boom Ahead For Commercial Refrigeration

THIS column has so long been known as a "prophet of doom" that it may come as a shock—a pleasant one, we hope—to readers when we turn so brightly bullish on commercial refrigeration.

The NEWS has joined many elements in the industry in a year-long crusade to advance the cause of commercial refrigeration as a *necessary* part of the war effort. As in the war with Japan, we felt assured of ultimate victory, but in the meantime most efforts have been met with disappointment.

A remarkable thing is happening in Washington now, however. Some of the brighter individuals within the WPB are leading a fight to protect commercial refrigeration from curtailment, and to exempt manufacturers of commercial equipment from orders to convert their plants to the making of lethal weapons.

Above them are some men who believe that it's necessary to convert every metal-working industry to the making of the actual machines of war.

It is the effort on the part of those who know how important refrigeration is to convince those who don't that is causing the delay in the refrigeration repair parts order and the commercial refrigeration order.

Upon the reorganization of the OPM, both of these orders (as published in the NEWS Dec. 24) were thrown out the window, and orders sent down to issue new, more drastic cuts. Weeks of struggle, of patient education, and persuasion have followed.

It now appears that refrigeration's friends in the WPB are winning their

point. Based on army and navy needs alone, they have proved, the present commercial refrigeration industry will be occupied in 1942 at close to 80% of capacity. When absolutely essential civilian needs are piled on top of that, it may become necessary to increase plant capacity in the industry.

Army and Navy needs will include:

- (1) A tremendous number of new ships;
- (2) Doubling the cantonment facilities;
- (3) Mobile units, and semi-permanent field units to supply attacking forces;
- (4) An enormous number of supply depots on island ports, and in allied nations' supply bases in every continent.

The task of supplying refrigeration for these new locations is staggering. It will strain the productive facilities of the industry, if carried out according to plan.

And when you add to these enormous requirements the necessary replacements for civilian food processing, storage, and serving; for new and enlarged communities of armament workers; and for new uses developed in connection with the armament program, you arrive at projected quotas beyond anything the industry has yet seen.

Interesting to note, canny John Wyllie, general manager of Temprite Products, foresaw this situation independently some time ago, and voiced his thoughts on it at a meeting of the Detroit Chapter of the American Society of Refrigerating Engineers.

Utilizing his own market research calipers, Mr. Wyllie came to an alarming conclusion. If something isn't done to keep present commercial refrigeration manufacturers from converting to arms making, he predicted, the demand on the part of the government itself for refrigeration products will so far exceed the supply that new refrigeration producing facilities will have to be created!

This he rightly viewed as a calamity both for the nation and the industry. It's highly encouraging, then, to learn that men within the WPB are aware of this acute situation, and that they are amassing data to validate their position.

If they win their point—and it now appears that they will—the industry will be amply repaid for the deteriorating effects suffered through the delay in issuance of definite orders for its guidance.

Commercial refrigerators don't shoot bullets. Neither do trucks or machine tools. But without all three, bullets couldn't be directed at the enemy.

LETTERS

MIKE SWEENEY DEFENDS LONG WARRANTY PERIOD

General Electric Co.
Appliance & Merchandise Dept.
1285 Boston Ave.
Bridgeport, Conn.

Editor:

I have carefully read and analyzed your editorial in the Jan. 28 issue on the subject of "Long Warranties" and would like to make some comments on this subject because I feel that the questions you raised should be answered.

My comments apply only to the refrigeration business although I believe they would be equally applicable to other appliance lines.

They'll Do It Every Time By Jimmy Hatlo



To me your editorial raised these four principal questions:

1. Why have a long warranty at this time when presumably all production could be sold anyway?

2. The long warranty is unsound under present conditions and the obligation incurred may not be possible of fulfillment.

3. Will service parts and service men be available?

4. The long warranty increases service calls and therefore, service expense.

To answer these questions intelligently one must first understand the terms and provisions of the so-called long warranty.

Briefly stated (and using ours as the example) it provides:

1. Free repair or replacement of any defective part of the entire refrigerator during the first year of use.

2. The additional 4-year replacement contract provides for free repair or replacement of the sealed-in mechanism should it become inoperative during the second, third, fourth, or fifth year of use. (The above are, of course, subject to limitations as covered in the warranty and replacement contract.)

Now let's consider questions 1, 2, 3, and 4 above in the light of the provisions of the warranty.

Question No. 1. Even assuming that all the refrigerator production could be sold if a short warranty were adopted, I cannot see that this has any bearing on the advantages or disadvantages of a long warranty. Surely the industry (including manufacturers, wholesalers, and retailers) would not favor a type of warranty that would be changed every year or oftener depending only upon their ability to sell the production available.

Question No. 2. In answer to this question, I should like to remind everyone that the rapid growth and the high volume reached by the refrigeration industry is a result of the confidence of millions of users and prospects in the excellent performance of electric refrigerators and the fine service they render in home use. The long warranty surely contributed substantially to the rapid growth of this business by establishing greater consumer confidence.

The manufacturer, wholesaler, and retailer have no less obligation today than yesterday to see that the product they make and distribute renders the type and quality of service for which the purchaser bought it. Our obligation to the purchaser of a refrigerator to do our best to maintain that refrigerator in satisfactory operation remains the same regardless of whether the term is for one day or five years. The warranty merely defines what services will be rendered without charge to the customer and for how long.

Question No. 3. Personally I think that service parts will be available in sufficient quantity to maintain the essential services of the household refrigerator. There will be problems, to be sure, but these can and will be solved.

Of course many present service men will be transferred to other activities and occupations. This means that new ones must be trained and the knowledge and efficiency of those employed must be improved. This too will present some problems but they can and will be met if intelligent planning and training programs are adopted. Fortunately, we do not need the highly skilled type of mechanic in the field to properly service our hermetically sealed refrigerator.

Shortening the warranty will not reduce the requirement for service parts, make them more easily available, nor relieve the shortage of service men.

Question No. 4. The total cost of servicing a product should not be affected by the length of the warranty. The only question

decided by the warranty is who pays for the service required—the consumer, the retailer, the wholesaler, or the manufacturer.

To the average reader of the editorial as written, the inference is that distributors and retailers have been given the responsibility of discharging the obligation of a long warranty on a no charge basis and without compensation. This of course is not the case.

Our outlets have the responsibility of rendering free service on defective parts or workmanship during the one year warranty. New parts are exchanged for defective ones and compensation to the retailer for service is provided for in the gross margin.

To clarify the question of free service under the terms of our four-year replacement contract a portion is quoted below:

"This obligation does not extend to the refrigerator cabinet, porcelain or other finishes, control, relay, or any other part of the said refrigerator, except the hermetically sealed-in mechanism thereof, nor does it include adjustments whereby the refrigerator is made to operate, it being distinctly understood that charges may be made for such adjustments."

Consequently a retailer is privileged to charge a customer after the first year for any call where a control is adjusted or replaced, a relay is replaced, cabinet door is adjusted, etc. In addition where we have actual failures of the sealed-in mechanism, and where the customer is entitled to a free replacement under the terms of the contract, we reimburse the retailer through the distributor for doing this work through the medium of an allowance which is made for each such failure under the contract.

A reduction in the term of the warranty with a corresponding reduction in allowances to the retailer would in my opinion merely transfer some of the service costs from the manufacturer to the consumer and this would be harmful to the dealer rather than beneficial.

I agree that a reduction in the term of the warranty would permit a manufacturer to shift part of his present product responsibility to the retailer and the consumer. It would also permit manufacturers, who desired to do so, to reduce the quality of their product and to make substitutions of material without themselves having to assume their present responsibility for performance and long life. This, in my opinion, would not only be a step backward for the industry but would be expensive in the long run for the retailer.

Of course any retailer who on his own responsibility offers free service beyond the terms of the warranty, or who overstates and does not explain the warranty, or who does not charge for legitimate service, or who operates an inefficient service department will have higher than average service expense. These are problems that only proper management can correct and which should be corrected now. Shortening the warranty is not the solution.

To me the long warranty is more advantageous to the retailer during present conditions than during normal business times.

In addition to those advantages already mentioned, consider the opportunity for extra service income and profit. The opportunity that the NEWS, other trade publications, and manufacturers have endorsed and encouraged.

The average retailer has immediately available a long list of customers who, because of the long warranty, quite naturally look to the retailer from whom they purchased, for repair and maintenance service.

The long warranty has helped to "make" thousands of refrigerator retailers and it will be a big factor in keeping them in business.

A. M. SWEENEY,
Manager, Household Refrigerator Section

Rebuilding Operations**Overhaul and Reconditioning of the Westinghouse Household Unit****Step-By-Step Procedure For the Service Shop**

By R. L. Walsh, Westchester Dealers Refrigerator Rebuilding Service, New Rochelle, N. Y.

Editor's Note: The following is the first part of an article on the fundamental procedure in overhauling and rebuilding Westinghouse hermetic household refrigerating units.

The information was prepared by Roland L. Walsh, operator of the Super Refrigeration Sales & Service in New Rochelle, N. Y., and who also acts as the exclusive rebuilder of electric refrigerators in Westchester county. Articles on other types of units will probably follow.

Hermetically sealed units cannot be properly rebuilt unless a service man has the proper tools. One set of tools that I consider necessary is a Kerotest "service valve kit for all hermetic units" otherwise known as a "CY" set. (Other manufacturers who make sets for this purpose are Imperial Brass Mfg. Co. and Mueller Brass Co.) Another tool I have found necessary is a Presto-Lite torch.

The service man will also find necessary and important the 1936 Refrigeration & Air Conditioning Specifications Book, published by Business News Publishing Co. It is important to have this book handy because it gives the exact amount of the refrigerant and oil charges, eliminating the kind of guesswork that can get you into trouble.

Have your work bench cut out so as to accommodate sealed units, thus making them much easier to handle.

REMOVING THE UNIT

In rebuilding Westinghouse units, note that the Westinghouse unit can be taken out of the cabinet in one unit, either by lifting it from the top, or by taking the front top cabinet panel off.

When you get the unit on the bench, plug it in and let it run for at least two cycles, if it will operate. If the unit will not operate, make some tests to determine what is wrong.

Get a test lamp and test all the leads from the a.c. line right into the motor. If after these tests and any corrections the motor still does not run but just "hums," take the switch cover off by loosening the small nut on the front and then with the plug in the a.c. feed, with a 60-watt bulb in your lamp socket, test across the blue starting resistor. If the unit starts to operate, replace the resistor (which can be purchased separately).

If after these tests the motor still hums and doesn't turn over, short out the cut-out switch. If the motor still refuses to work, the motor field is burned out and it will have to be replaced.

Next, assuming that the motor is running, listen to the evaporator to find out how the refrigerant is coming in, to determine whether or not the float is operating correctly.

CHECK EVAPORATOR LEAKS

Check as to whether there is any mushy tar around the float. If there is, a leak in the evaporator lines is indicated.

In cutting off the end of the unit, necessary to check the operating parts inside, the service man's best bet is to take it to the nearest machine shop that has the proper facilities. The machine shop will cut it off, and when you have it ready again the shop should weld the end at a cost that should be around

\$2.50 for the cutting and the welding.

Take the lines from the fan and switch off of the motor, and if you don't know the color scheme of the connections, make a drawing of the hookup and be sure that you don't displace it. Next, remove the switch and fan assembly from the condensing unit base. Disconnect the two "night watchman" leads and remove the night watchman.

Connect a purge line onto the high side float using the "CY" set and then discharge the refrigerant from the entire system into an empty cylinder.

Turn the unit on end and with a Presto-Lite torch melt all of the tar out of the box holding the float. Make sure that you get all of it out of the neck of the evaporator. Catch this tar in some old receptacle or utensil, and put it in a safe place, as you will have use for it later.

Loosen the three screws that hold the float in place. Next, remove the three nuts that hold the evaporator in place inside the square box.

REMOVING THE EVAPORATOR

Using a hack saw blade, cut the liquid line leading from the float into the evaporator, and cut it so that there is as much tubing left on the float as possible. Then cut the suction line at the neck. Loosen the three bottom bolts of the evaporator and remove the evaporator from the condensing unit base. Cut the tubing from the condenser to the float, and set the evaporator and float aside.

Take the compressor and motor unit off of the three springs. Clean the condenser thoroughly, using a pressure air hose or a stiff brush. After the machine shop (or your own shop, if you have the facilities) has cut the back end of the compressor be sure to mark the three soldered connections from the stator on the inside of the cast iron base, so as not to make any mistakes.

Stand the unit on its rear end and lift the cast iron upwards to bring forward the motor and compressor assembly. Remove all of the oil. Replace the discharge valve, making certain in installing a new one that it moves freely.

If the stator should be rewound, unbolt it and rewind it. Then put the complete unit back in place and solder by hand the three leads coming from the stator, according to the color or wiring scheme. When this has been done, have the unit welded.

After the unit has been welded and spray painted (a battleship grey), the system is ready for reassembly.

(To Be Concluded)

Sterilamps Up Storage Time of Fish, Crabs

PITTSBURGH—Installation of six Westinghouse Sterilamps in the cooler and package room of Cook Foods Co., 4830 Hatfield St. here, has increased the company's food processing capacity by 35%, reports L. H. Meyers, manager of Meyers Refrigeration Co.

Tests showed that the firm could leave fish or crabs in the refrigerator only one week, but after the installation of Sterilamps, food could remain in the refrigerator for two weeks without any change.

Four 30-inch lamps were installed in the 20 by 6-foot cooler.

Represents Penn

HARVEY OLMSTEAD

Olmstead To Manage Penn's Denver Office

DENVER—Harvey M. Olmstead has been appointed representative for Penn Electric Switch Co. in this territory, with headquarters at 1708 Sixteenth St. here.

Well known among Denver architects, contractors, distributors, and service men, Mr. Olmstead has had 27 years of experience in the electrical engineering field. He will handle sales work on all Penn automatic controls for heating, refrigeration, engines, pumps, and air compressors in this area.

Premium Setup For 'Over Quota' Mining Of Copper Is Ready

WASHINGTON, D. C.—Rules and regulations by which U. S. mine operators may obtain premium prices for over-quota production of copper, lead, and zinc have been announced by William L. Batt, WPB director of materials, and Leon Henderson, federal price administrator.

Premium prices of 17 cents per pound for copper, 11 cents for zinc, and 9 1/4 cents for lead will be paid by Metals Reserve Co. for a period of two years beginning Feb. 1, 1942. Should the emergency end before the termination date, Metals Reserve Co. has reserved the right to terminate the arrangement on equitable terms.

Premiums will apply to all over-quota production after Feb. 1, regardless of when tonnage quotas are announced and actual payments begin. By continuing meanwhile to ship through ordinary channels, producers will be assured premium prices for over-quota production.

Quotas will be established by mines or groups of mines, rather than by companies, in order to avoid any possibility that expenditures for expansion of one property might be deterred by uncertainties as to future production from one mine or group of mines of the same producing company.

Companies which own two or more properties must account for any material decrease below quota of any one property. If such a decrease is apparently due to avoidable circumstances, quotas of all properties of the company will be combined, and premiums paid only to the extent that total production exceeds the total company quota.

Purpose of the plan is to expand output of copper, zinc, and lead because of their importance in the production of armaments.

Today's MAGIC SYMBOL..



EVEN your magical industry whose frosty fingers bring the tingling chill that preserves our meats . . . quick freezes our vegetables . . . conjures tempting desserts in an odd moment . . . cools, filters, washes and humidifies our air . . . even makes possible moisture-controlled air supplies that stabilize giant steel-making furnaces . . . even you, must rely on this magic symbol to expedite supplies.

Your foresightedness in mastering each new application of industry has shown your importance in bolstering Victory production directly and indirectly. Hence to many of you the magic symbol is yours.

Genuine Kerotest Valves and Fittings are still available in the same high standard of quality you have always known and accepted but their use is limited to the War Program and essential applications.

To you, with the magic symbol we can assure service consistent with the urgency of your need . . . to the entire industry we offer full cooperation on any valve or fitting problem and every assistance that we are permitted to extend.

KEROTEST **KEROTEST**
MANUFACTURING CO.
PITTSBURGH, PA.

There is a serious cylinder shortage. We cannot obtain new cylinders. Prevent delays in your deliveries — by returning each of your empties quickly! Send them back the same day—it will be appreciated.

Cylinder deposits are repaid immediately upon return of your empties.

DUPONT **Artic**
REG. U. S. PAT. OFF.
METHYL CHLORIDE

DUPONT **Artic**
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THE R. & H. CHEMICALS DEPARTMENT
E. I. DU PONT DE NEMOURS & CO. (INC.)
Wilmington, Delaware
Or National Ammonia Division
Frankford P. O. Philadelphia, Pa.



Digest of Laws relating to filing and recording of Real Estate Contracts

States	Instrument recommended for use	File or record copy or original	Time limit within which to file or record	Necessary signatures	Acknowledgement or affidavit of who is required	*Fixtures Common Law (C. L.) or Statute	With whom is contract filed or recorded?	Place where contract is filed or recorded?
Nebraska	Cond. Sales Contract Cond. Sales Contract—Contract must contain name of Seller and Buyer, description of property, full and true intent of Seller.	File Contract or copy except motor vehicles; encumbrance to be noted on title certificate in lieu of filing	Immediately	Buyer	None	C. L.	County Clerk, except motor vehicles; notation on title certificate by County Clerk	County where buyer resides
Nevada	Cond. Sales Contract	None Required	Unnecessary	Buyer	None	C. L.	None Required	None Required
New Hampshire	Cond. Sales Contract	Record Original	Within 20 days after delivery of property	Buyer	Affidavit by both Seller and Buyer	C. L.	Town Clerk	Town where buyer resides. If buyer is not within State, where seller resides. If neither buyer nor seller reside within State where goods are located
New Jersey	Cond. Sales Contract	File Copy, except motor vehicles; abstract of contract	Within 10 days from making of contract, except motor vehicles: 5 days	Buyer	None, except motor vehicles: acknowledgment by Seller. Also see fixtures	Statute	County Clerk or Register of Deeds, except motor vehicles: Commissioner of Motor Vehicles	County where property is first kept for use; fixtures, where realty located
New Mexico	Cond. Sales Contract—must not contain confession of judgment	File Copy File Copy—Motor vehicles; copy with certificate of title	Immediately	Buyer and Seller	Acknowledgements by Buyer and Seller	C. L.	County Clerk County Clerk, except motor vehicles; Department of Motor Vehicles	County where property is located
New York	Cond. Sales Contract Cond. Sales Contract—Effective Jan. 1, 1942, statute will govern content of contract for the sale for \$1,500.00 or less of goods for use other than commercial or business use and require copy to be delivered to Buyer.	File Copy	Within 10 days from making of contract	Buyer	None (see Fixtures)	Statute	Town or City Clerk, except County Seats, with Register; if no Register, then County Clerk. New York City—4 counties with Register, Richmond County, with County Clerk; fixtures, County Clerk, except Kings, Queens, Bronx, Manhattan and Westchester Counties: County Register	Where buyer resides; if buyer non-resident, then where property located. Fixtures where realty located
North Carolina	Cond. Sales Contract	Register Original, or duplicate original in Mecklenburg County, which is 8½x11 on paper of 20 lb. wt. Master form contracts may be registered in some counties	Immediately	Buyer and 1 witness unless acknowledged	Acknowledgement by Buyer (or signature may be proved by acknowledgement of 1 or more witnesses)	C. L.	Instrument should be delivered to Clerk of Superior Court who forwards it to Register of Deeds. Contract not deemed recorded until registered and indexed in his office	County where buyer resides; if non-resident of state then county where property is located
North Dakota	Cond. Sales Contract	File Original or authenticated copy	Immediately	Buyer and 2 subscribing witnesses unless acknowledged	Acknowledgement by Buyer or may be signed before 2 witnesses in lieu	C. L.	Register of Deeds	County where goods located at time instrument executed
Ohio	Chattel Mortgage	File Original or True Copy with affidavit, except motor vehicles; in lieu, obtain notation of lien on certificate of title by Clerk of Courts of County where certificate issued	Immediately	Buyer	Affidavit by Seller	C. L.	County Recorder, except motor vehicles	County where Buyer resides; county where goods are located, if Buyer non-resident. Motor vehicles excepted
Oklahoma	Cond. Sales Contract	File Original	Immediately	Buyer	None	C. L.	County Clerk	County where goods are located
Oregon	Cond. Sales Contract	None Required (except for fixtures)	Unnecessary	Buyer	None	Statute	None Required	No
Penn.	Cond. Sales Contract	File Copy, except motor vehicles; in lieu, obtain certificate of title with encumbrance noted	Within 10 days from making of contract	Buyer	None (see Fixtures)	Statute	Prothonotary, except motor vehicles: obtain certificate of title with encumbrance noted from Sec. of State	30 days preceding 3 years and y
Rhode Island	Cond. Sales Contract	None Required	Unnecessary	Buyer	None	C. L.	None Required	No
South Carolina	Cond. Sales Contract	File Copy	Immediately	Buyer and 1 witness	Affidavit by Witness	C. L.	Clerk of Court except Charleston, Greenville, Spartanburg, with Register. In Richland County send contract to County Treasurer	County where Buyer resides, if non-resident where property is located at time instrument executed
South Dakota	Cond. Sales Contract	File Copy	Within 10 days from making of contract	Buyer	None (see Fixtures)	Statute	Register of Deeds	County where property first kept for use after sale
Tennessee	Cond. Sales Contract	None Required	Unnecessary	Buyer	None	C. L.	None Required	No
Texas	Chattel Mortgage	File Original; chattel mortgages on motor vehicles invalid as to purchases from and creditors of mortgagor unless noted on title certificate	Immediately	Buyer (mortgagor)	(if original filed)	Statute	County Clerk	County where property is situated when mortgage executed or where Buyer resides
Utah	Cond. Sales Contract	None required except for motor vehicles (certified copy of contract) and live stock	Unnecessary, except motor vehicles: 10 days after contract executed	Buyer	None (except live stock)	C. L.	None required except motor vehicles: Motor Vehicle Division of State Tax Commission	No
Vermont	Cond. Sales Contract	Record Original or Certified Copy	Within 30 days after property is delivered	Buyer	None	C. L.	Town or city clerk; if buyer resides in unorganized place, with county clerk	No
Virginia	Cond. Sales Contract—must use ten-point type on contract and pica type for clause forbidding oral waivers or modification	File Original, except motor vehicles; in lieu of filing, notation required on certificate of title	Within 5 days after property is delivered	Buyer and Seller	None	C. L.	In Richmond—Clerk of Chancery Court; elsewhere either with Clerk of Circuit Court, Huntingdon Court, or Clerk of Corporation Court	County or town where buyer resides; if buyer non-resident of state, then county or town where seller resides
Washington	Cond. Sales Contract	File Original	Within 10 days after buyer takes possession	Buyer and Seller	None	Statute	County Auditor	County where Buyer resides, except fixtures where realty located
West Virginia	Chattel mortgage if Seller may repossess and sue for deficiency	File Original	Within 10 days from execution	Buyer (mortgagor)	Acknowledgement and Affidavit by Buyer (Mortgagor)	Statute	County Auditor	County where property is situated
Wisconsin	Cond. Sales Contract—should be on white or light colored paper, of not less than 24 lbs. (if bond paper not less than 13 lbs.) with at least 50% rag content, approximately 8½" wide, and 7, 10½, or 14" long; must contain post office addresses of parties. Motor Vehicles: Seller must deliver statement to Buyer at time of sale, containing certain data.	File Copy	Within 10 days from making of contract	Buyer	None (see Fixtures)	Statute	Clerk of County Court	County where goods are kept; fixtures, where realty situated
Wyoming	Cond. Sales Contract	File Copy	Immediately	Buyer	Affidavit by Seller	C. L.	Register of Deeds	County where property is located at time of execution of contract
						County Clerk		every 6 years

*There are Certificates of Title Laws in these states.

*The decisions on fixtures are conflicting even in the same state, because they involve a mixed question of law and fact. No definite rule can be laid down. Decisions and statutes should be studied with respect to the specific kind of fixtures. It is recommended that waivers be obtained from mortgagees and other lien holders of realty.

†Where both buyer and seller sign, both acknowledgments are required.

§There are stamp taxes on promissory notes and other obligations in these States.

**Usury no defense to corporations in Del., Fla., Ill., Md., Mich., Mo., N.Y., Ohio (obligations maturing 1 year or more after date), Pa., Va., W.Va., Wis., on corporations organized under 1925 act. Usury statutes and penalties vary in different states. Small loan and industrial banking laws and the like are not considered here.

TODAY—MORE THAN EVER BEFORE

—you NEED the
"RECALIBRATOR"



In these days when it is difficult to get any kind of equipment, you have all the more reason for making certain that the equipment you DO get will handle its job properly. In gauges and dial thermometers this means Marsh—instruments with the "Recalibrator." Any gauge or dial thermometer can be knocked out of adjustment. But if it's a Marsh instrument with the "Recalibrator," the twist of a screwdriver restores it to complete accuracy at every point on the dial. The "Recalibrator" doesn't merely compensate for error—it actually eliminates the source of error. It's your best defense against the jars and jolts of service work for years to come.

JAS. P. MARSH CORP., 2067 Southport Ave., Chicago, Ill.

MARSH

Refrigeration Instruments

Madison Dealer Increases Space, Lines, Employees

MADISON, Wis.—Greatly increasing its floor space, the Gamble store will move to its largest location at 315 W. Gorham St., offering 19,000 sq. ft. for sales and display, according to Don Peacock, store manager.

In its new location the Gamble store will offer appliances, drive-in automobile service, sporting goods, automobile accessories and parts, housewares, farm machinery, poultry supplies, and furniture.

Several new employees will be added to the sales staff of the store, Mr. Peacock stated.

New Gibson Distributor For Central Texas Area

DALLAS, Tex.—Radio City Distributing Co. here has been appointed distributor of Gibson electric refrigerators and ranges in the Dallas and central Texas territory.

Carolina Utility Sales Pass 1940 Total

RALEIGH, N. C.—Dealer sales of household refrigerators in Carolina Power & Light Co. territory during 1941 passed those of the previous year by nearly a thousand units.

Total for last year was 14,691, against a mark of 13,827 in 1940. Electric range sales by dealers hit 4,843 units, against 4,361 in 1940, and water heater sales totaled 1,697, against 1,396 in the preceding year.

Appliance sales by the power company during the year totaled 112 refrigerators, 274 ranges, 306 water heaters, 14 vacuum cleaners, 11 washers, and six radios.

Following is a comparison of dealer sales of principal appliances for 1940 and 1941:

	1941	1940
Refrigerators	14,691	13,827
Ranges	4,843	4,361
Water Heaters	1,697	1,396
Air Conditioners	35	67
Vacuum Cleaners	2,787	1,953
Clothes Washers	6,875	6,048
Dishwashers	37	31
Radios	38,626	39,504

U. S. GOVERNMENT Specification

Filtrine

Cafeteria Coolers
Filtrine Mfg. Co., Brooklyn

Fulco
ADJUSTABLE
REFRIGERATOR
COVERS

Fit any refrigerator. Excellent quality covering, well padded and reinforced at edges. Reduce loss from damage in transit to a minimum by full equipment with FULCO Adjustable Refrigerator Covers.
FULTON BAG & COTTON MILLS
Manufacturers since 1870
Atlanta St. Louis Dallas New Orleans
Minneapolis New York Kansas City, Kan.

Instalment Sales Contracts in the United States (Cont.)

		Has landlord a lien when contract has been filed or recorded?	What are the filing or recording fees?	Legal rate of interest	**Limit allowed by contract	Are attorneys' fees stipulated for, on the face of the note, collectible; if so, how much?	Must seller elect between his remedies?	If so, will the election of one remedy bar the election of any other remedy available to the seller? Effect of stipulation for concurrent remedies	Are the contracts of a married woman in business as a trader enforceable at law as if unmarried?
Within 30 days before yearly date and yearly	No	25¢; marginal release—no fee. Other release—no provision	6%	9%	No	Yes	Retaking releases Buyer from obligation to pay purchase price	Yes—marriage emancipates infants	
Within 30 days preceding 3 yrs. and yearly, except motor filing good for date of maturity	No	None Required	7%	12%	Yes—but not in replevin	Not decided	Seller's remedies are governed by terms of contract	Yes—if over 18 years. If authorized by district court to transact business in own name, may sue and be sued alone in all cases	
Within 30 days preceding 3 years and yearly, then realty	No	30¢ each page of 224 words; release 50¢	6%	No Limit	No decisions	No	Seller may retake the goods, resell and sue for deficiency	Yes—if over 21 years. Cannot become surely for husband	
Within 30 days preceding 3 years and yearly	No	\$1.00; release 20¢ except motor vehicles: noting encumbrances, 50¢; satisfaction, 25¢	6%	6%	No decisions	No	Seller may retake the goods, resell and sue for deficiency	Yes—if over 21 years	
Within 30 days preceding 3 years and yearly	No	25¢ release—no fee	6%	10%	Yes—reasonable	Yes	Seller may retake the goods or sue on the contract for the purchase price. Seller may sue for deficiency if contract so provides	Yes—if over 21 years	
Within 30 days preceding 3 years and yearly	No	New York City: \$1.25 plus \$1.25 for assignment; 50¢ additional against realty; satisfaction (N. Y. & Queens County 10¢, Bronx and Kings \$1.10, Richmond \$1.35), receipt 25¢; elsewhere filing 50¢, satisfaction 10¢ except Nassau County, filing \$1.00, assignment \$1.00; satisfaction 50¢; receipt 25¢, Westchester County, filing and indexing 75¢, satisfaction 10¢, certificate of satisfaction 25¢	6%	6%	Yes 15% allowed	No	Seller may retake the goods, resell and sue for deficiency	Yes—if over 21 years	
Within 15 years after debt	No	Fees vary locally	6%	6%	No	No	Seller may retake the goods, resell and sue for deficiency. Under statute effective Jan. 1, 1942 if contract is for \$1,500.00 or less of goods for any use other than a commercial or business use Buyer is released where 80% paid and Seller accepts return of goods	Yes—if over 21 years	
Within 30 days prior to maturity in statutes	No	25¢; release—no fee	4%	7%	No	Yes	Seller may retake the goods or sue for purchase price. An election of one remedy bars the other. Court may permit Buyer to make default good within reasonable time in action to foreclose conditional sale	Yes—if over 18 years	
Within 30 days within 30 days of expiration date	No	6¢ for filing; recording 10¢ per 100 words; discharge—no fee. Motor vehicles: noting lien on certificate of title, 30¢	6%	8%	No	No	Foreclosure is proper remedy. Do not retake household goods, mechanics tools, or wearing apparel without legal process	Yes—if over 21 years	
Within 30 days preceding 3 years and yearly	No	25¢; release—no fee	6%	10%	Yes—10% allowed	Yes	Seller may retake the goods, resell and sue for difference between the aggregate amount received and the agreed price or may sue for damages and retain a lien for the amount of judgment	Yes—if over 18 years	
Within 30 days preceding 3 years and yearly	Yes	None required; fixture statements filing 50¢; satisfaction 25¢	6%	10%	Yes—must be reasonable and not based on percentage	Yes	Election to retake the goods acts as bar to recovery of purchase price and vice versa. Where contract so provides, Seller may repossess, sell, and sue for deficiency	Yes—marriage emancipates infants	
Within 30 days preceding 3 years and yearly	No	50¢; release 30¢. In some counties, prothonotaries charge \$2.00 filing fee	6%	6%	Yes—reasonable	No	Seller may retake the goods, resell and sue for deficiency	Yes—if over 21 years. May not become accommodation maker, surely, guarantor, or endorser for another	
Within 3 years	No	None Required	6%	30% over \$50.00	No decisions	Yes Dictum	Repossession and recovery of unpaid balance inconsistent remedies, and doing either constitutes election. Provision giving Seller right to retake, resell, and sue for deficiency will be upheld but contract may be deemed chattel mortgage subject to recording statute	Yes—if over 21 years. May not become trading partner of husband	
Within 30 days preceding 6 years and yearly	No	Fees vary locally	6%	7%	Yes—reasonable—10% allowed	No	Seller may retake the goods, resell and sue for deficiency	Yes—if over 21 years	
Within 3 months preceding maturity of debt	No	25¢; release—no fee	6%	8%	No	No	Seller may retake the goods, resell and sue for deficiency	Yes—if over 18 years	
Within 30 days preceding maturity of debt	No	None Required	6%	6%	Yes—10% allowed	No	Seller may retake the goods, resell and sue for deficiency	Yes—if declared feme sole in application in which husband joins	
Within 30 days preceding maturity of debt	No	25¢; release 25¢	6%	10%	Yes—reasonable	Yes	Seller must foreclose and may retake only if provided in contract	Yes; marriage emancipates infants	
Within 30 days preceding maturity of debt	No	None Required	6%	10%	Yes—reasonable	Yes	A retaking of the goods is an absolute election and seller may not thereafter sue for the balance of the price due	Yes—if over 21 years	
Within 30 days preceding maturity of debt	No	For recording or releasing contract, 25¢ per folio, with minimum fee of 50¢	6%	6%	Yes—if more than bare agreement shown	No	Seller may foreclose or make attachment in suit for purchase price. Unless resale is held within 60 days after repossession Buyer's obligation is cancelled	Yes—if over 21 years	
Within 30 days preceding maturity of debt	No	25¢; release 25¢	6%	6%	Yes—reasonable	No	Rights are determined by the court	Yes—if over 21 years	
Within 30 days preceding maturity of debt	No	50¢; release 25¢	6%	12%	Yes—as fixed by contract	Yes	Seller may retake the goods or sue for purchase price. One is bar to the other. Contract authorizing Seller to retake, resell and sue for deficiency construed as chattel mortgage	Yes—if over 21 years or if married to a person who is over 21 years	
Within 30 days preceding maturity of debt	No	50¢; release 25¢	6%	12%	Yes—as fixed by contract	No	Foreclosure proper remedy	Yes—if over 21 years	
Within 30 days preceding maturity of debt	No	50¢; release 35¢. If instrument is printed in smaller than ten point type with at least two points separating each line, twice the regular fee may be charged	6%	6%	No	No	Seller may retake the goods, resell and sue for deficiency	Yes—if over 21 years	
Within 30 days preceding maturity of debt	No	50¢; release 25¢. If contract does not comply with statute, as to size an additional fee of $\frac{1}{2}$ the regular fee will be charged	6%	10%	Yes—reasonable	No	Seller may retake the goods, resell and sue for deficiency	Yes—if over 21 years	
Within 6 years	No	25¢; no provision for discharge	7%	10%	Yes—reasonable	No decisions	Seller may retake goods or sue for purchase price. Clauses allowing Seller to retake, with Buyer liable for deficiency, upheld	Yes—common law governs age of majority	

NOTICE

The information contained here was obtained from reliable sources and authorities, but is not guaranteed. Users are cautioned to examine the statutes and judicial decisions as to the legal status of contracts and instruments, and where there is a doubt as to sufficient and adequate protection, competent lawyers should be consulted. The requirements set forth herein are subject to legislative change from time to time.



Interstate Electric Wins Crosley Radio Contest

CINCINNATI—Interstate Electric Co., New Orleans, topped all Crosley radio distributors in a nation-wide sales contest in which a national average sales increase of 206% was registered for four weeks, reports R. I. Petrie, Crosley vice president.

In the contest, distributors were divided into five groups, with competition between members of individual groups only. Other group winners, besides Interstate, were: Crosley Distributing Co., Cincinnati; Tracy-Wells Co., Columbus, Ohio; H. E. Sorenson Co., Des Moines, Iowa; and Newkirk's Radio Supply Co., Rapid City, S. D.

Second-prize winners in the five groups were: Copper Louisville Co., Louisville, Ky.; California Electric Co., San Francisco; Stanley Distributing Co., St. Louis; Interstate Hardware Co., Bristol, Tenn.; and Kentucky Mine Supply Co., Harlan, Ky. In addition to a gift watch presented to O. G. H. Rasch, of Interstate Electric Co., cash awards went to all contest winners.

G-E Issues Book On Food Nutrition

BRIDGEPORT, Conn.—A 24-page nutrition booklet, "How to Get the Most Out of the Food You Buy," has been prepared by the home service section of General Electric Co. with the cooperation of Dr. Helen S. Mitchell, Director of Nutrition for Defense.

Purpose of the booklet is to offer home service directors and nutrition workers a simplified, complete story on nutrition, combining information from a variety of sources under one cover. The booklet itself presents a "5-Star Plan" for planning, purchasing, storing, and cooking foods, designed to assure balanced diets at minimum expense. No G-E product advertising is incorporated in the booklet, and the company takes only a small credit line for having prepared it.

The booklet is available in quantity to distributors, dealers, and utility companies, either gas or electric, for use at cooking schools, demonstrations, or as a hand-out piece.



Although the All-Industry Chicago Exhibition was cancelled, we want to assure jobbers and customers that we are continuing as usual to accept and deliver orders for Ansul products. As far as we can see, for basic reasons, we shall continue to do so.

Ansul Chemical Company, Marinette, Wis.

**ANSUL METHYL CHLORIDE
SULPHUR DIOXIDE**

STEEL MEANS VICTORY...

CONSERVE IT... RETURN YOUR EMPTY CYLINDERS!



New Tests Reveal Importance of Prevention of Radiant Heat Loss In Maintaining Human Comfort

Much Lower Air Temperatures Possible With Reflective or Cooled & Heated Wall Surfaces

By F. O. Jordan

PHILADELPHIA—The important effect of radiation of heat to or from walls, ceilings, and floors upon our sense of comfort was brought out in the paper "Panel Heating and Cooling Performance Studies" delivered by B. F. Raber and F. W. Hutchinson at the forty-eighth annual meeting of the American Society of Heating & Ventilating Engineers.

There has been a growing recognition of the importance of surface temperature for some time. Previous tests and past experience have long since shown that we are comfortable at room air temperatures generally considered chilly if the walls are warm enough. Conversely, air temperatures generally considered altogether too high for comfort are actually required to keep us from feeling uncomfortably cool if the walls of the room are cold.

These facts are part of the reason for putting insulation in walls. For if walls are kept warm by insulation in the winter time, comfort will be maintained at lower air temperatures in the room than is the case in the uninsulated room with cold walls.

Likewise, in the summer time the air conditioning system does not have to keep the air in the house so cool to keep us comfortable if the walls

are prevented from getting hot by insulating them against the summer sun and heat waves.

The reason we feel warmer in a room with warm walls than if the walls are cool, even though the air temperature is the same in both cases, is that our bodies do not lose so much heat to the room surfaces by radiation if the surfaces of the room are warm. Tests demonstrated that other means of preventing this loss of radiant heat from our bodies are effective also. These tests show that if reflective room surfaces are used for preventing heat loss from the body to the walls by radiation, we will feel comfortably warm even though both wall and air temperatures are far cooler than hitherto deemed conducive to comfort.

"Within the limits of usual operating temperatures," the speaker explained, "conditions of comfort exist when the body's sensible heat loss remains practically constant."

"At reduced air temperature the convective fraction of sensible heat loss increases, and, therefore, a corresponding decrease in the heat loss by radiation becomes necessary. Heating systems of the panel type are usually designed to effect a decrease in the net radiant loss by increasing

the emissive power of the surrounding surfaces.

"The investigation covered by this paper deals with the environmental systems in which a similar reduction of net radiant heat loss is accomplished by decreasing the effective absorptivity of enclosure surfaces and thereby reflecting back to the occupants some of the radiant energy which they emit."

The speaker explained that it has been found comfort is realized at an air temperature of 57° in a room whose emissivity is approximately 0.9 if the room surfaces are heated to the same temperature as the clothed human body—about 83° because radiant heat loss from the body is prevented. In this case the function of the surface temperature of the room is to stop radiant heat loss from the body.

COMFORT AT 57°

Therefore, comfort should be realized in any room where the air temperature is kept at 57° regardless of the surface temperature of the room, provided that some means is employed for preventing radiant heat loss from the body.

In the tests described by the speaker, radiant heat loss from the occupants was prevented by lining the test room with burnished copper which reflected heat instead of absorbing it as conventional room interiors do.

The speaker said that if the interiors of our homes were decorated by perfectly reflective surfaces, "the only heat required would be that needed to raise the ventilation air to 57° F. and to supply transmission losses for the air-to-air temperature difference; the enclosure surface would come to an equilibrium temperature less than 57° F. and the requisite heat input to the system could be achieved with any kind of heating system. With perfectly reflective surfaces, the size and shape of the room would not effect the condition of zero net radiant transfer." The resulting reduction in our fuel bills is obvious.

However, a perfectly reflective surface is not available, the speaker admitted. One of the purposes of this investigation was to examine reflective surfaces that are available, and determine the conditions that must be maintained to keep the living quarters comfortable when they are used.

With room air at 70°, equivalent comfort is obtained at the combinations of surface temperature and reflectivity combinations shown by Table 1.

Table 1 - Effect of Reflectivity

Reflectivity Per Cent	Surface Temperature Fahrenheit
0	70
89	60
94	50
96	40
98	0
100	—460 to infinity

From this information it is evident that reflective surfaces have sufficient influence on comfort only if their effectiveness is in excess of 90%. However, for reflective surfaces whose effectiveness is above this figure, sufficient benefit is obtained to justify their consideration.

For checking the effect of reflective surfaces on human comfort in cool air, a 5 ft. cubic with inside area of 150 sq. ft. was used. As stated above, this test cubic was lined with burnished sheet copper. The reflectivity of the interior with this treatment was 97.5%. As explained above, comfort would be obtained at a temperature of 57° F. with 100% reflectivity.

CONDITIONS SPECIFIED

However, a somewhat higher temperature would be required for the burnished copper with reflectivity of 97.5% used in the test cubic. The speaker explained that the temperature must be "sufficiently above 57° F. to reduce the convection loss by an amount equal to the radiant exchange between surface and occupant."

"The radiant loss to a 57° F. surface having an emissivity of 0.025 (reflectivity of 97.5%) is 41% of that lost to a black body enclosure at 70° F. Black body loss at 70° F. is 160 B.t.u. per hour so the radiant loss resulting from non-perfect reflec-

Table 2—Results of Tests Based on Four Consecutive Votes From Report of Each Different Subject*

Schedule No.	Sensation	Votes Out of 200	Per Cent Of Total
1	Uncomfortably hot	0	0.0
2	Uncomfortably warm	1	0.5
3	Comfortably warm	4	2.0
4	Ideally comfortable	94	47.0
5	Comfortably cool	83	41.5
6	Uncomfortably cool	18	9.0
7	Uncomfortably cold	0	0.0
		200	100.0

*All votes for reactions Nos. 3, 4, or 5 represent comfort conditions, and 90.5 per cent of all votes were for comfort.

tion is 0.41 x 160 = 65 B.t.u. per hour.

"Since the total heat loss must be constant (for comfort), this 65 B.t.u. per hour must be deducted from convective loss. As a first approximation, the convective loss may be considered directly proportional to the temperature drop from a clothed body (83°F.) to the ambient air; the necessary air temperature is then,

83 — 57

t = 83 — (300 — 65) = 62.6° F.

300

"Thus in an enclosure 5 ft. x 5 ft. x 5 ft. having perfectly diffusing surfaces of 97.5% reflectivity, comfort conditions would be anticipated with air at 62.6° F. and surfaces at 57° F."

TEST CONDITIONS

In the actual test chamber, the air was maintained at 60° F. and the walls at about 57° F. Means were provided for accurate control of the air volume and temperature admitted to the chamber, and the temperature surrounding it was regulated to maintain the desired surface temperature in the chamber.

Sixty subjects were tested, both male and female. The average test period for each test subject was 50 minutes. No special clothing was required, all subjects being tested in whatever clothing they wore.

(Table 2 shows the tabulation of the votes taken after the subjects were tested.)

The speaker made the following

comments on the test results:

"The large block (41.5%) of comfortably cool votes indicates that respiration of air at the lower temperature causes the average person to be conscious of a pleasant coolness even though the exterior body heat balance is perfectly normal. Many of the subjects recorded the impression that the air in the enclosure seemed to them unusually fresh and invigorating; some of the subjects read or studied between readings and commented, on leaving, that the enclosure atmosphere did not induce the feeling of drowsiness which they frequently associated with such activity. In contrast to the 22 subjects who commented favorably on the effect of breathing enclosure air, two men reported that the air seemed stuffy."

"The average reaction of each subject was determined from his four votes; 86% of all subjects had an average which represented conditions of comfort. The group averages for 50 subjects, one test each, was 4.57; that is, half way between the reaction scheduled as ideally comfortable and that scheduled as comfortably cool. Investigating the distribution of votes cast by each individual, the variation of reaction during the test period is found to be as follows:

Of 50 subjects:

76% were comfortable throughout the entire test period.

12% were comfortable for 75%

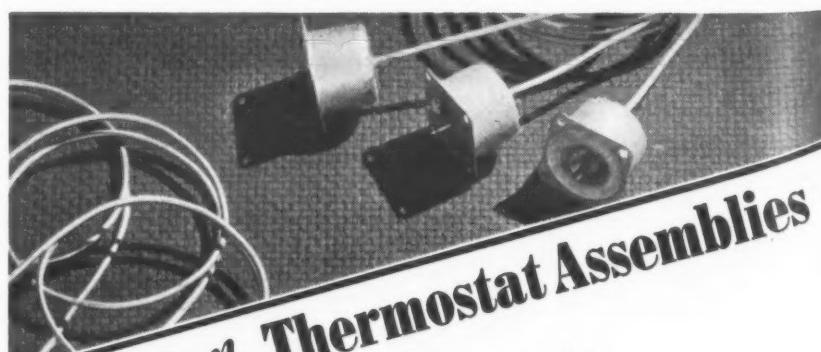
(Concluded on Page 11, Column 1)

1 and 1½ H.P. Condensing Units PRICED BELOW MARKET!

Prominent manufacturer offers for immediate delivery their surplus inventory of the following high-capacity, low-temperature, condensing units subject to prior sale:

25 - 1 H.P.	air-cooled condensing units, 4-cylinder V-type, with single phase 60 cycle 110/220 volt motors, pulleys and belts, less controls. Overall dimensions 31" long, 24½" wide, 24" high	Each \$129.75
30 - 1 H.P.	water-cooled condensing units, twin-cylinder, with single phase 60 cycle 110/220 volt motors, pulleys and belts, less controls. Overall dimensions 30½" long, 19½" wide, 24½" high	Each \$125.75
17 - 1½ H.P.	water-cooled condensing units, twin-cylinder with single phase 60 cycle 110/220 volt motors, pulleys and belts, less controls. Overall dimensions 30½" long, 19½" wide, 24½" high	Each \$138.75

All have methyl chloride refrigerant. All units are in original crates. Prices are f.o.b., Chicago, subject to Federal Excise Tax. Wire or phone C. G. Erikson, 1011 East 95th Street, Chicago. Phone number Regent 7420.



Sylphon Thermostat Assemblies

• Known Quality to
Leading Refrigerator and
Control Manufacturers

THE FULTON SYLPHON COMPANY, KNOXVILLE, TENN.



WILL PURCHASE:

New 3 and 5 ton self-contained Air Conditioning Units
Standard makes only.

State quantity, current characteristics, and price.
Furnish Catalog Sheets, if possible.

Maryland Refrigeration Co.
706 North Howard Street
Baltimore, Maryland.

Another Reason Why MASTER Equipped Locker Plants Are Vital To Defense

Wickard Warns Of Heavy Demand On Food Supplies

Washington, Jan. 12.—(AP)—Declaring the war was placing new, unexpected and as yet unmeasurable demands upon this country for food, Secretary of Agriculture Wickard today cautioned Americans against being excessively concerned about prices and too complacent about supplies.

Emphasizing that he did not wish to alarm consumers, Wickard said they should nevertheless recognize now that events since Pearl Harbor had greatly altered the food situation.

"Today no one can tell," the secretary said, "what the demands upon us may be before the war is won. We may be called upon to furnish vast supplies to Allied fighting forces and peoples all over the world."

Algeria has banned the importation of olive oil.

Master Lockers are endorsed by and sold only through distributors of refrigeration and insulation.

MASTER REFRIGERATED LOCKER SYSTEMS, Inc.
121 Main St.
Sioux City, Iowa

Over 250,000 Masterbuilt Lockers in Use

Radiant Heat Loss Reduction Slashes Cooling, Heating Bill

(Concluded from Page 10, Column 5)
of the time and uncomfortably cool or warm for the remaining quarter of the test.

12% were comfortable for 50% of the time and uncomfortably cool for the remaining 50%.

0% were uncomfortably cold or hot at all times.

100% "A comment repeatedly occurring on subjects' data sheets is that an immediate sensation of warmth was experienced when the door of the reflection chamber closed. Many subjects noted a feeling of warmth on all exposed skin surfaces while some stated that this effect was limited to the face. A few tests were made with subjects having rolled sleeves; they reported that the exposed forearm remained comfortably warm for the duration of the test."

The findings of these tests certainly are interesting to both the designing engineer and to the owner for they indicate the possibilities in insulating the occupants of buildings against excessive heat loss from their bodies by providing reflective interior surfaces for the rooms as well as by installing insulating materials in the walls for resisting outward heat flow.

Proof that we can be comfortable in ordinary "indoor" clothing at indoor air temperatures of around 60° F. if radiant heat loss from our bodies to the interior surfaces of the room are materially reduced surely indicates possibilities of considerable economy in first and operating costs of heating plants. Furthermore, there should be less discomfort and sickness from the contrast when one goes outdoors from a 60° room than is the case upon going from a room at the 70° to 75° temperatures now generally maintained.

However, the paper shows that the effectiveness of surfaces having less than 90% reflectivity does not justify their use. Obviously, burnished copper and similar linings for our homes are out of the question for many reasons. Possibly the time will come when highly reflective materials suitable for finishing off the interiors of our buildings will be available in large quantities at prices that make them economically justified.

Until then it looks as if we must use panel heating or some such method for reducing radiant heat losses from our bodies if we wish to make use of lower inside design temperatures.

Specify and Buy Fedders Refrigeration Products
FEDDERS MFG. CO., BUFFALO, N.Y.

Bush Mfg. Co. FINNED TUBE PRODUCTS
HARTFORD, CONN.

Seamless PENN BRASS and COPPER TUBING
PENN BRASS & COPPER CO.
ERIE, PENNA.

3 CATALOGS IN 1
HERMETIC UNITS - COMPRESSORS - PARTS
FRIGIDAIRE - KELVINATOR - HORSE - G-E
Complete Line Refrigeration Parts - Tools - Supplies
WRITE FOR YOUR COPY ON YOUR LETTERHEAD

SERVICE PARTS CO.
MELROSE PARK, ILLINOIS

MUELLER BRASS CO.
Port Huron, Mich.
TRIPLE SEAL DIAPHRAGM VALVE
Longer Diaphragm Life
Positive Sealing at Three Essential Points

Priorities Information

Questions on Use of PD-1a's & P-100 Answered at Clinic on Priorities

DETROIT—Use of the new priorities form PD-1a, the priorities plan for small business PD-25-X, repair parts order P-100, and the workings of the new War Production Board were outlined to small businessmen here last week at a priorities clinic conducted by the WPB and the Detroit Board of Commerce.

The meaning of the alphabetic terms in the priorities order system were defined as follows: M orders affect the flow of materials, each order different from any other. They are conservation orders, limiting the use and distribution of materials.

E orders—Refer to machine tools, etc.

L orders—Limitation orders which regulate the manufacture of certain articles, such as metal in refrigerators, radios, and metal office furniture. They serve to divert material to defense production, limiting the volume of civilian production to a percentage of a basic period.

P orders—Production orders and preference rating orders. They provide a blanket priority rating for a manufacturer of instruments of war so that he can obtain necessary available material. The orders rate each material in its order of importance.

The complicated mechanism of Priority Certificates, which are ratings for individual purchase orders, were summarized as follows:

"PD-1's are available to anyone who believes he has need of a preference rating. There is no limit to what may be asked for under this rating. You must prove the importance of what you plan to manufacture. After March 1 the use of PD-1a for such purposes will be mandatory.

"PD-3a cannot be reproduced. You can use one when you catch one. It is extendible.

"The new PD-1a is more useful if, for example, the supplier needs parts to complete a job. It is extendible to suppliers and sub-suppliers. Because it is extendible, it will be scrutinized very carefully. Perhaps ratings will be tougher. Describe very specifically and accurately what you want. The old PD-1 lacked this extendible feature.

"PD-1a is extendible for suppliers and sub-suppliers only for materials that are physically grouped on certificates. Question 2 of PD-1a asks you to explain the relationship of the product you are producing to the war program, national welfare, or government program. So establish the importance of what you want definitely in a few words. Put down the details and put them down clearly. Answer all questions; don't leave blanks."

PD-3a is extendible and does not require a company signature, it was stated.

"Preference ratings regulate the use of the product, not the product itself. Allocations are used in reference to raw materials and finished products. In form PD-25a of the Production Requirements Plan (PRP), the manufacturer is allocated materials based on the necessity of his product to defense and for essential civilian uses. The producer shows not only his rating pattern, but also the ultimate use of his product before given use of the requested materials. Already 3,000 manufacturers are operating under this system.

"A modified production plan, PD-25-X or 'Little PRP,' was conceived for the small business man, with a yearly volume of less than \$100,000. These two plans take the use of the products into consideration, controlling them so there will be little waste."

Distributor Limitations Order M-67 limits plumbing and heating supplies. Distributors must limit their inventory to 2/12 of their 1941 sales from stock.

The new distributor section of WPB will provide a clearing house for distributor committees. In the future distributors must know the ultimate consumption of their products, it was stated.

P-100 was established to keep manufacturing plants and essential services equipped with important operating, maintenance, and repair

supplies through A-10 rating. Plants cannot replace material in anticipation of needs, but the order does permit replacing of normal stock, it was pointed out.

"Distribution is considered essential," it was said. "To maintain his present status the distributor should continue to perform his service, keep his inventory well under control, dispose of his slow-moving items which can be used by someone else, keep his items moving. As the changeover from peace to war affects sales of items, it is recommended that distributors keep a stock of maintenance and repair items."

Following are some of the questions asked by members of the audience concerning problems.

Q—Can P-100 be used to replace parts and build up commercial refrigeration units?

A—Yes, where a wholesaler or producing plant is involved or where it involves a so-called frozen storage unit. (Editor's Note: This may mean locker storage plants.) As far as the retail market is concerned, he is excluded from the use of P-100.

Q—Will PD-25-X be available for distributors?

A—It is only a manufacturers

form, not for use by distributors. And it is only for the small manufacturer.

Q—How would a building company get priority for replacing valves?

A—In certain cases, P-100 if it fits into the situation and if the company is entitled to it. Otherwise, P-1.

Q—If customer has A-10, P-100 rating, can we use it if it has not been extended to us?

A—It is such a simple process, he ought to extend it. If he is an old established customer of yours and completely reliable, you can use it before he extends it, but don't be caught out on a limb.

Q—If general order has P-100 statement and items to be released pertain, must each release order contain a P-100 statement?

A—P-100 endorsement must be written on order, not attached. If it covers a definite quantity, it will not be necessary to use it for the release.

Q—What orders may not be reproduced?

A—PD-1-c, PD-3, PD-3a, PD-25-abcd, PD-26-(all); P-35, P-3, P-4, P-9-(all), P-15, P-52, P-41.

Q—What will be status of PD-1 certificates after March 1. Can they be used?

A—Yes, but no new ones will be issued.

Q—How does distributor extend PD-3-a?

A—Only by endorsing it in form prescribed.

Q—To whom or what department would a business apply to purchase the things necessary to move and expand?

A—If this plant is to be used for defense work and the expansion cost is over \$500, you would apply to

Washington on a PD-200.

Q—A jobber sells materials to various consumers on an A-10 rating (under P-100). How does he replace his stock?

A—He can accumulate the P-100 orders until such time as he gets an orderable quantity and pass this quantity on to his supplier with an A-10 rating.

Q—Will present rating granted on PD-3 and 4 be extended in the same manner as PD-3-a?

A—Until March 1, PD-3 and 4 will have to be extended in regular manner—by going to the local Army or Navy office and getting the certificate extended. After March 1 we have no information, but unofficially, it is possible that the same procedure will be followed on PD-3 as on the new PD-3-a.

Q—How does a supplier know how his product is to be used in the end when the end producer does not specify on his purchase order how it is to be used?

A—This new method to extend by endorsing the purchase order is an honorary plan and if that plan has been violated, the party writing this purchase order is not responsible.

Q—Are purchasers and suppliers mutually responsible in the proper application of P-100?

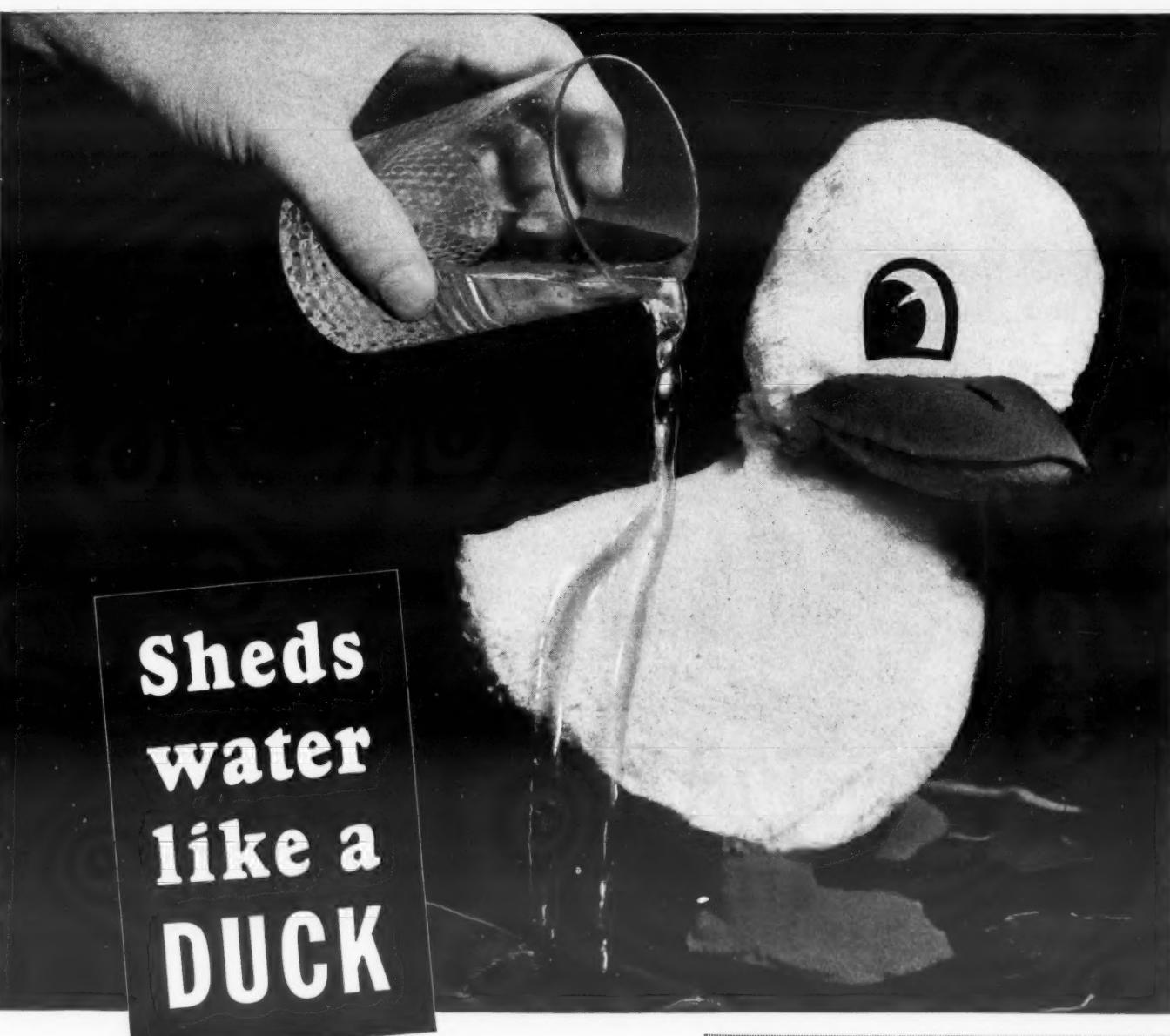
A—Yes.

Q—Could a tool manufacturer with P-11 rating sell merchandise to non-defense users?

A—B-11-A Order states that machine tools cannot be delivered without certificates.

Q—Do government agencies comply with the rules?

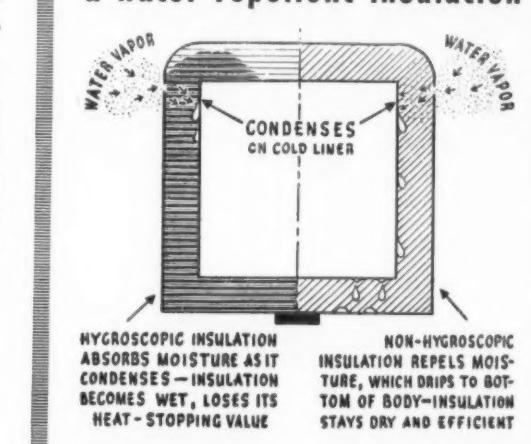
A—Government agencies are expected to abide by the rulings of the M orders.



Nature made Dry-Zero Insulation water-repellent. The long fibers have a natural wax-like coating that makes them non-hygroscopic. Any moisture that condenses on Dry-Zero Insulation rolls off and is drained away. Hence, it maintains its heat-stopping ability for the life of one refrigerator after another.

Dry-Zero Insulation has high heat-stopping efficiency ("k" factor of 0.24). It is extremely light, too—weighing only 1/7 as much as commercial corkboard. Properly installed, it will not pack, settle, rot, or absorb odors. Dry-Zero Insulation is also easy to install and is non-irritating to the skin of workers. Write Dry-Zero Corporation, 222 North Bank Drive, Chicago; or 60 E. 42nd St., New York.

Why you need a water-repellent insulation



1. MOISTURE REPELLENCE
2. HIGH EFFICIENCY
3. LONG LIFE

DRY-ZERO **Insulation**

Correcting Service Complaints on Overloaded or Overheated Motor

Motor Troubles & Their Correction

Editor's Note: Following material is part of a section in the series of articles on motors written by R. A. Fuller of General Electric Co.'s industrial engineering department—a section that is of prime interest and importance to service engineers now, because it deals with the servicing of electric motors. Previous articles have discussed fundamentals of motor construction, and proper installation and maintenance procedure.

By R. A. Fuller,
Industrial Engineering Dept.,
General Electric Co.

Complaint - -

A. Overload Device Trips Out or Motor Overheats (Cont.)

10. Incorrect Connection Of Motor Terminals

"Incorrect connection of motor terminals," such as a 115/230 volt motor connected for the lower voltage but used on 230 volts, causes serious overheating and overload tripping. The connections should be checked carefully against those on the motor nameplate or in the motor instructions where these are available. Means for determining proper connections for many single phase motors, when a connection diagram is not available, are given in the chapter on "Installation."

11. Motor Running In Wrong Direction

"Motor running in wrong direction," on an air cooled condensing

unit, results in low air flow through the condenser and, as a result, high head pressure. The majority of motors in general use are reversible as discussed in the section on "Installation." Many compressors can be operated successfully with reversed rotation. However, such operation should be avoided unless there is definite knowledge that this is satisfactory. The effectiveness of splash feed oiling systems, the action of oil pumps on forced feed lubricating systems, and the action of automatic belt tightening motor bases may be affected.

Power company men and electricians are extremely careful to maintain existing "phase rotation" on three phase lines. However, a mistake may infrequently be made and this should therefore be included as a possible cause of reversed rotation. The correction for this is to interchange any two of the three wires supplying power to the motor.

12. Incoming Water Too Warm

"Incoming water too warm," on water cooled condensing units, causes an increase in water flow. This results from the wider opening of the water regulating valve in its endeavor to hold a constant head pressure. With the warm cooling water, when the condensing unit stops, the head pressure will not decrease as rapidly as normal and the motor starting duty becomes somewhat more severe. Adjusting the water regulating valve for greater flow, if it is not already set for maximum flow, will be helpful.

With still higher incoming water temperature the fully opened water regulating valve may not be able to supply sufficient water to maintain the desired head pressure and the running load of the motor increases. The installation of a larger condenser, or the addition of an auxiliary condenser in series with the original one will reduce the motor load.

Other possibilities are reduction of

the compressor speed, by changing to a smaller motor pulley, changes in back pressure control and expansion valve adjustments to lower the average back pressure at which the compressor operates, or the addition of a fan on the motor pulley to give forced air circulation over the motor.

Only a moderate sized fan is required—enough to thoroughly keep the air in motion over the outer surfaces of the motor. If such a fan is used there should be adequate guards around it and around the belts. The use of a larger motor is, perhaps, the most positive corrective measure.

13. Inadequate Water Flow

"Inadequate water flow" on water cooled condensing units can be detected by observing the rate of flow of the condenser discharge water, its temperature, and the head pressure. If this is caused by the setting of the water regulating valve, it should be set to hold a lower head pressure. It is possible that the low rate of water flow is caused by sticking of the water regulating valve, clogging up of a water strainer, or partial clogging of the water lines. Parts thus affected should be cleaned and this cleaning included in a regular maintenance program. A settling tank or additional water strainer may prove helpful.

14. One Line Not Energized

"One line not energized" in three phase installations, will result in failure of the motor to start and in overload tripouts. This can very readily be checked with the test lamp. The line which does not light the test lamp when the lamp is connected between it and either of the other two lines is the dead one. A blown fuse, or other open circuit in the line, may be the cause. If the power supply coming into the building is dead on one line, the power company will have to correct the trouble.

15. Unsoldered Joints In Rotor

"Unsoldered joints in rotor" may occur in rotors having the connections between the bars and end rings made with solder. This will generally occur when the motor has been overheated and there may be whiskers of solder sticking out from the soldered parts of the rotor as evidence. Another indication is that there may be particles of solder on the stator winding that have been thrown off from the rotor. The motor may run hotter than normal, the speed may be noticeably below normal, and the overload may trip out. Due to expansion and contraction of the parts, the trouble may only be evident when the motor is hot—it is also possible that it may only be evident when the motor is cold.

Where such trouble is suspected the joints, between the bars and the end rings, can be resoldered and the motor tested for satisfactory operation for three or four hours on a fairly heavy load. A compressor pumping air, and with a hand valve in the discharge line for regulating head pressure, makes a fairly satisfactory means of loading.

Acme Industries Sales Group Meets



JACKSON, Mich.—Following cancellation of the All-Industry Show in Chicago, Acme Industries, Inc., called a meeting here of all of the agents who handle their products. The purpose of the meeting was to discuss a cooperative plan among agents and to devise means of filling sales volume gaps caused by priorities and resultant changed conditions.

The picture above shows about two thirds of the group. They are:

Middle row—D. M. Core (Gannon company), Louisville; A. Stuart Mitchell, Washington, D. C.; George B. Filbert, New York City; Charles P. Rittling, Buffalo; C. Paul Blanchard (Craun-Liebing Co.), Cleveland; Russell R. Gannon (Gannon company), Cincinnati.

Front row—O. K. McCullough, Kansas City, Mo.; Day S. Graham, Springfield, Mass.; Emanuel Feinberg, Columbus, Ohio; K. A. Weatherwax, general manager, Acme Industries; W. E. Lloyd, Chicago; E. B. Dunphy, sales engineer, Acme; L. W. Horr, sales engineer, Acme; L. R. Smith, chief engineer, Acme; J. W. Snyder (Gannon company), Cincinnati.

Right row—O. K. McCullough, Kansas City, Mo.; Day S. Graham, Springfield, Mass.; Emanuel Feinberg, Detroit; Otto A. Friemel (Brass & Copper Sales), St. Louis; Paul C. Meyer (J. C. Meyer & Son), Pittsburgh.

Air Compressor In Service Shop Will Help Through the Emergency

DALLAS, Tex.—With new-appliance production curtailed, the appliance service man is going to find himself with a lot of extra work to do—but the tire-rationing program and other restrictions on automotive equipment may get him into some rather ticklish spots unless he starts planning now to avoid possible future difficulties, believes J. L. Booth, operator of a large servicing organization here.

One of the best—and cheapest—things the service man anxious to beat future tire trouble can do, he says, is to provide himself with an adequate supply of air for his motor equipment.

The system which has been furnishing him all of the air he has required, whenever he needed it, employs an old $\frac{1}{2}$ -hp. compressor, powered with a $\frac{1}{2}$ -hp. motor. The installation furnishes not only all of the tire air ever required, but compressed air for the test board installed in the shop, and for countless minor operations. It is used freely for cleaning, where blowing best does the job; and a line may be led into the Booth residence to provide compressed air for whatever uses it might be put to there.

In the interest of economy of space, the air storage tank which supplies the Booth shop has been buried under the shop floor. It consists of a tank of 4-inch by 48-inch size, operated in conjunction with a White-Rodgers high pressure cutout. To safeguard against possible cut-in owing to blow back, Mr. Booth has contrived an electric pilot lamp, mounted in a shop window, where it can be observed from his office within the house.

There are approximately 50 feet of air lines under the floor of the Booth shop, serving various purposes. One of these is the installation for the tire service. Cost of this was not more than \$1.50, Mr. Booth avers. His determination to have air for his cars whenever he needed it followed an experience which, no doubt, every service man has known.

"I had a hurry call one night long after midnight," he recalls. "It was a sulphur job, and the man, luckily, had found the leak early. I hurried to get started. Of course, my tires were down—and not a station was open nearby.

"I scrambled around hunting a pump. I messed and messed trying to get started; and when I did get to the place things had gone so far I had a big job on my hands. I decided that was one thing which never would happen again.

"Almost every service man will find he has a compressor he can use—almost any old 'dog' will serve. I have the old compressor off there in remote position, to eliminate the noise in the shop. The lines all are

underground in front of the pump.

"I can get from 200 to 250 pounds pressure, if I need it. The average, however, will be around 135 pounds. I use it on the test board right along. That is something every service man should have.

"What you spend on a test board is whatever you want to pay, of course. The sky can be the limit there. The compressor job, and whatever goes with it, however, need be little.

"The old unit cost next to nothing; and the motor not much more. The lines came from here and there—stuff I picked up this place and that. The hose on my tire service outlet cost me perhaps \$1.50.

"We all know that the life of a tire can be affected a lot by the attention we pay to the air pressure. It's a good investment any time to have your own air when you need it; and now, with tires what they are, a fellow ought to have it no less than his wrenches.

"It's going to be more and more important to get out to the jobs pronto. It's not going to be merely a matter of personal convenience whether we can get to the job soon enough to handle things when they are just beginning. Getting back lost gas may not be so simple. We've had something of a taste of that.

"Further, there is no end of uses air can be put to in the shop. Plenty of times it does the cleaning job easier and better than anything else.

"I look for a bigger and bigger demand on the ingenuity and resourcefulness of the service man. We are not going to have the smooth sailing we have been enjoying.

"We fellows will have to use our heads—as well as hands—a whole lot in the days ahead, to get around problems of every sort."

The Machine For Your Next Job...

If it's a refrigeration job...no matter how big or how small...we can supply Lipman equipment to fit the specifications. Let us work with you.

GENERAL REFRIGERATION DIVISION
Yates-American Machine Co.
Dept. AC-3, Beloit, Wis.

Model 153 Water-cooled Machine

Bease Manufacturing Company
INCORPORATED 1921
3815-3825 Carroll Street, Chicago, Illinois

Silverside
GR
AIR CONDITIONING



DAVISON'S
SILICA GEL
Moisture's Master
THE DAVISON CHEMICAL CORPORATION
Silica Gel Department
BALTIMORE • MARYLAND

A Masterpiece for Economy
MASTERCRAFT ADJUSTABLE PAD AND CARRYING HARNESS

Efficient, sturdy and economical. Provides safer handling and thorough protection of refrigerators. Pad and harness are separate units and both adjustable to practically all styles and sizes of cabinets.

Adjustable Pad \$11.75 each
Adjustable Harness \$8.50 each f.o.b. Chicago. Lining on pad at only \$1.25 per order pads extra.

Write for latest folder and prices on pads for refrigerators, washers, ironers, ranges, radios, etc.

BEARSE MANUFACTURING COMPANY
INCORPORATED 1921
3815-3825 Carroll Street, Chicago, Illinois

OPA Establishes Price Maximums For Household Refrigerators

(Concluded from Page 1, Column 4)
based on outstanding manufacturing contracts in effect on Feb. 2, 1942.

The schedule uses "net price quoted" to describe the ceiling levels and defines that term as "the actual price, exclusive of Federal excise tax, but including charges for warranty (guarantee of performance) and cooperative advertising, to be received by the manufacturer, f.o.b. seller's point of shipment, or delivered to the purchaser, whichever the price list specifies."

Manufacturers are required to submit to OPA on or before Feb. 25, a report on all models currently offered for sale and the maximum price set for each in accordance with the schedule.

Refrigerator manufacturers who have had their 1942 model prices approved by OPA include: Crosley Corp.; Kelvinator division, Nash-Kelvinator Corp.; Gibson Electric Refrigerator Corp.; Refrigerator division, Philco Corp.; Norge division, Borg-Warner Corp.; Stewart-Warner Corp.; Westinghouse Electric & Mfg. Co.; and Servel, Inc.

**TITLE 32—NATIONAL DEFENSE
CHAPTER XI—OFFICE OF
PRICE ADMINISTRATION**

Part 1380—Household and Service
Industry Machines

Price Schedule No. 102

Household Mechanical Refrigerators

Household mechanical refrigerators are of considerable importance to the consuming public. Between January and June, 1941, manufacturers' prices on these refrigerators were revised upwards on three occasions and advanced on the

average 5.9%. On June 23 the Office of Administration requested refrigerator manufacturers not to make further increases without consultation with this Office. Thereafter, no price increases have become effective without the approval of the Office of Price Administration and this approval has been granted only on the basis of a demonstrated rise in costs of production.

In effect, therefore, the present level of prices accords with that prevailing between Oct. 1 and Oct. 15, 1941, with necessary adjustments for these increased costs for all companies except the General Electric Co. and the Frigidaire division of General Motors Corp. who have not yet submitted their cost figures.

After investigation it has been determined that efficient administration, and uniform treatment of all manufacturers, make advisable the formalization of the existing arrangement by the issuance of a price schedule.

Accordingly, under the authority vested in me by Executive Order No. 8734, it is hereby directed:

Section 1380.51 Maximum prices for household mechanical refrigerators. On and after Feb. 9, 1942, regardless of the terms of any contract of sale or purchase, or other commitment, no manufacturer shall sell, offer to sell, deliver or transfer any model of household mechanical refrigerator at a price higher than the maximum price:

(a) Manufacturer's brand household mechanical refrigerators:

(1) In the case of all manufacturers who have had price lists on 1942 models approved by the Office of Price Administration, the maximum price, exclusive of federal excise tax, for any model of household mechanical refrigerator sold under the manufacturer's brand during the two-month period ended Feb. 2, 1942, shall be the net price quoted to the same general class of purchasers for such model in the manufacturer's price list in effect on Feb. 2, 1942.

(2) In the case of all other manufacturers, the maximum price, exclusive of

federal excise tax, for any model manufactured for sale under the manufacturer's brand during the two-month period ended Feb. 2, 1942, shall be the net price quoted to the same general class of purchaser for the most comparable model in the most recent 1941 price list, until a new price list has been approved by the Office of Price Administration.

(b) Private brand household mechanical refrigerators. The maximum price, exclusive of federal excise tax, for any model of household mechanical refrigerator sold under a brand other than the manufacturer's brand during the two-month period ended Feb. 2, 1942, shall be the highest price, exclusive of federal excise tax, specified for such model in a contract with a purchaser of the same general class in effect on Feb. 2, 1942.

(c) New Models. The maximum price for any 1942 model not manufactured or offered for sale before Feb. 2, 1942, and for any other model not offered for sale by the manufacturer in the two-month period ended Feb. 2, 1942, shall be the price approved in writing by the Office of Price Administration after the submission to it of a report in accordance with Section 1380.54 (c), and no sale, offer to sell, delivery or transfer of such model shall be made until such approval shall have been given.*

*Sections 1380.51 to 1380.59, inclusive, issued pursuant to authority contained in Executive Orders Nos. 8734, 8875, 6 F.R. 1917, 4483.

Section 1380.52 Less than maximum prices. Lower prices than those established by this Schedule may be charged, demanded, paid, or offered.*

Section 1380.53 Evasion. The limitations set forth in this Schedule shall not be evaded whether by direct or indirect methods in connection with the manufacturing or assembling of household mechanical refrigerators by deterioration of quality or performance thereof, or in connection with a purchase, sale, or transfer of household mechanical refrigerators, alone or in conjunction with any other material, or by way of any commission, service, transportation or other charge or discount, premium or other privilege, or by tying-agreement or other trade understanding, or by decreasing cash discounts, allowances for or absorption of transportation costs, or by any other means.*

Section 1380.54 Reports.

(a) Present line. On or before Feb. 25, 1942, every manufacturer shall submit to

the Office of Price Administration a report on all models currently offered for sale, giving the maximum price established for each model by Section 1380.51, the specifications, and the terms of sale. Manufacturers who have already submitted all or any part of this information need not duplicate such material but shall send a reference to the material already submitted.

(b) Approval of price lists. Manufacturers who have not had price lists on 1942 models approved, may submit to the Office of Price Administration price lists on 1942 models for approval, giving the necessary description of the models, cost, profit, and other information which may be required by the Office of Price Administration.

(c) New Models. Manufacturers wishing to offer for sale a new model as defined in Section 1380.51 (c) shall submit to the Office of Price Administration a report on such model, giving proposed maximum price, the specifications, and the terms of sale.

Persons affected by this Schedule shall submit such other reports to the Office of Price Administration as it may, from time to time, require.*

Section 1380.55 Records. Every manufacturer making sales of household mechanical refrigerators on or after Feb. 9, 1942, shall keep for inspection by the Office of Price Administration for a period of not less than one year, complete and accurate records of each such sale showing the date of billing, the name and address of the buyer, the name, number or other designation and the price received for each household mechanical refrigerator, the quantity of each household mechanical refrigerator sold, and discounts and allowances of any nature given.

Section 1380.56 Enforcement. In the event of refusal or failure to abide by requirements, or other provisions of this price limitations, record and report Schedule, or in the event of any evasion or attempt to evade the price limitations or other provisions of this Schedule, the Office of Price Administration will invoke all appropriate sanctions at its command, including taking action to see (a) that the Congress and the public are fully informed thereof; (b) that the powers of Government, both state and federal, are fully exerted in order to protect the public interest and the interest of those persons who comply with this Schedule; and (c) that the procurement services of

the Government are requested to refrain from selling to or purchasing from those persons who fail to comply with this Schedule. Persons who have evidence of the receipt or demand of prices higher than the maximum prices or of any evasion or effort to evade the provisions hereof, or of the speculations or manipulation of prices of household mechanical refrigerators, or of the hoarding or accumulation of unnecessary inventories thereof are urged to communicate with the Office of Price Administration.*

Section 1380.57 Modification of the Schedule. Persons complaining of hardship or inequity in the operation of this Schedule may apply to the Office of Price Administration for approval of any modification thereof or exception therefrom:

Provided, That no application under this section will be considered unless filed by persons complying with this Schedule.*

Section 1380.58 Definitions. When used in this Schedule, the term

(a) "person" means an individual, partnership, association, corporation, or other business entity;

(b) "manufacturer" means a person operating a factory or plant which manufactures or assembles household mechanical refrigerators;

(c) "household mechanical refrigerator" means any refrigerator for household use which operates either by compression or by absorption;

(d) "model" means any combination of size and specifications of equipment;

(e) "net price quoted" means the actual price, exclusive of federal excise tax, but including charges for warranty and cooperative advertising, to be received by the manufacturer; f.o.b. seller's point of shipment, or delivered to the purchaser, whichever the price list specifies.*

1380.59 Effective date of the Schedule. This Schedule shall become effective Feb. 9, 1942.*

Leon Henderson,
Administrator

Harder Gets Defense Work

ALBANY, N.Y.—New defense contracts calling for delivery of metal lined and airtight ammunition cases beginning in March were recently awarded the Harder Refrigerator Co. of Cobleskill, N.Y.

YOUR GUIDE TO SUPPLIERS

918 Manufacturers and 353 Jobbers of 242 Products Listed in Refrigeration & Air Conditioning Directory

Get and keep this directory as your guide to suppliers during and after the war. New listings this year are in bold-face type. The manufacturers of the following products are listed in this Directory.

AIR CONDITIONING—Air cleaners, filters, and washers; anemometers; blower-filter units, window type; central systems; centrifugal blowers and blower wheels; chemical dehumidifiers; coils; condensing units; damper controls; dampers and shutters; exhaust and attic fans; evaporative coolers; fan blades; grilles, registers, and diffusers; humidistats; humidity indicators and recorders; odor absorbers; ozone machines; portable humidifiers; psychrometers; refrigerants; room thermostats and temperature controls; self-contained room and store coolers; thermometer controls; unit coolers; water chillers.

COMMERCIAL REFRIGERATION—Beer cooling low side systems; bottle beverage coolers; cabinet, building, and duct insulation; carbonators; coin operated refrigerated dispensing machines; condensing units and compressors; cooling rooms; diesel and gas engines; display case dehydrators; display case glass; display cases; door gaskets; dough retarding refrigerators; drinking water coolers; finned evaporators; fish and poultry display cases; fixture thermostats; flexible metal bellows; freezer-storage refrigerators for farm use; frozen food display cases and storage cabinets; glass wool insulation; hard rubber parts; hardware; hermetically sealed units; ice cream cabinets, conversion units, and counter freezers; ice cube makers and evaporators; ice makers; industrial refrigeration systems; locker systems; low temperature testing cabinets; mercury switches; milk coolers; plate type evaporators; portable ice cream counter freezers; pressure controls; reach-in refrigerators; refrigerants; refrigerator doors; sharp freezers; soda fountains; solenoid valves steel pipe coils; storage lockers; temperature controllers; time switches; thermostatic expansion valves; two-temperature valves; ultra-violet lamps; unit coolers; water chilling systems; water cooling low side systems; water filters and purifiers; water regulating valves; wire shelves.

HOUSEHOLD REFRIGERATION—Breaker strips; cabinets and finishes; condensing units;

control repairs; defrosting trays; dishes and water bottles; door gaskets; evaporators, fronts and doors; electric, gas, and kerosene refrigerators; hardware; ice cube trays, crushers and cutters; hermetic unit rebuilding plants; household refrigerator rebuilding plants; liquid dehydrants; lubricants; name plates and escutcheons; pads and carrying harnesses; plastic materials and molders; porcelain liners; refrigerators; refrigerator carriers; refrigeration unit bases; replacement controls; rubber parts; sealing compounds; wire refrigerator baskets.

PARTS, MATERIALS, SUPPLIES, ACCESSORIES—Accumulators; air-cooled, evaporative, and water-cooled condensers; aluminum, brass, capillary, and copper tube; ammonia valves and fittings; automatic and thermostatic expansion valves; bearings and bushings; capacitors; charging hose; chemicals; circuit breakers; combination gauge outfits; compressor gaskets and valves; converters; cooling towers; copper sheets; crankshafts; dehydrating ovens; dehydrators and filters; dial, industrial, and pocket thermometers; drying agents; electric, household refrigerator, and miniature motors; fastening-locking devices; flare and sweat fittings; flaring tools; flexible metal tube; flow meters; fusible metal plugs; gas masks; gasket tackers; gauges; heat exchangers; hermetic motor parts; high and low side float valves; leak detectors; liquid line insulation; liquid indicators and receivers; line valves; lubricants; manifold assemblies; modulating refrigerant valves; motor brushes, pulleys, and starters; oil separators; operation recorders; overload protective switches; pinch-off tools; pressure recorders; pressure regulating, reducing, and throttling valves; purgers; refrigerant cylinders; refrigerants; refrigerant transfer systems; sealing compound; service tools; shaft seals, bellows, nose pieces, and rings; solenoid valves; solder; solvents; stampings; temperature recorders; testing laboratories; tube benders and cutters; two-temperature valves; V-belts; vibration eliminators; water regulating valves; wire brushes.

1044 Changes
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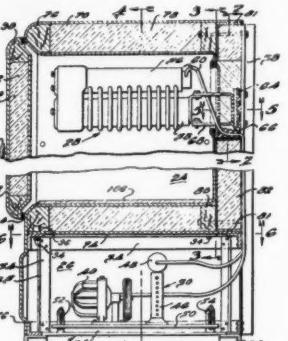
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PATENTS

Weeks of Jan. 20 & 27

2,270,407. CABINET CONSTRUCTION. Howard E. Blood, Detroit, and Earl F. Hubacker, Highland Park, Mich., assignors to Borg-Warner Corp., Chicago, Ill., a corporation of Illinois. Application May 27, 1938, Serial No. 210,336. 3 Claims. (Cl. 62-116.)

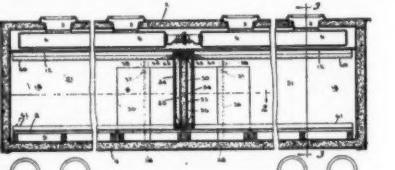


1. A rectangular frame defining a door opening, a fibrous casing molded around said frame and defining a refrigerator cabinet, a fibrous food tank internally spaced from said cabinet and integrally molded with said casing at said door opening, insulating material packed around said tank, a frame for supporting said cabinet and adapted to receive compressing machinery, a standard rising above said frame and adapted to support an evaporator forwardly thereof, an opening in the back of said tank for inserting an evaporator therethrough and insulating means carried by said standard.

2,270,494. INSTRUMENT TO INDICATE AIR PRESSURE AND TEMPERATURE. George E. Barnhart, Pasadena, Calif. Application Jan. 2, 1940, Serial No. 311,999. 6 Claims. (Cl. 73-4.)

3. In an instrument of the class described, an outer tube having an enlarged bulb at one end, an inner capillary tube disposed within said outer tube, said inner tube having a bulb disposed within and spaced from the first bulb, spacing means between said bulbs and between said tubes, the space between said tubes and bulbs being exhausted, the outer end of said capillary tube being flared outwardly and fused to the wall of the outer tube to form a cup-like receptacle communicating with the outer end of the capillary tube and with the atmosphere, porous material in said receptacle, a drop of liquid in said capillary tube and a filling of gas in said inner bulb and tube, a thermometer tube extending through and fixed to the walls of said inner and outer bulbs, said thermometer tube having a bulb thereon and having a capillary aperture communicating with the bulb and a filling of heat responsive fluid in the thermometer tube bulb.

2,270,524. REFRIGERATOR CAR CONSTRUCTION. Arthur A. Helwig, Chicago, Ill., assignor by mesne assignments, to Standard Railway Devices Co., a corporation of Delaware. Application Jan. 8, 1940, Serial No. 312,822. 7 Claims. (Cl. 62-17.)



1. In a refrigerator car having a roof, floor, and spaced apart walls which define a lading chamber, means to refrigerate said chamber, the combination of a substantially vertical partition arranged to divide said chamber into a pair of compartments, and a doorway in one of said walls arranged to provide access to each of said compartments, said partition being movable to a position in said lading chamber remote from said doorway.

2,270,544. REFRIGERATOR. Carl H. Nauert, Evansville, Ind., assignor to Servel, Inc., New York, N. Y., a corporation of Delaware. Application March 16, 1938, Serial No. 196,135. 1 Claim. (Cl. 220-15.)

Refrigerator cabinet structure including inner and outer sheet metal wall members spaced apart with edge portions turned toward each other and spaced to provide a relatively long and wide gap there-

between and forming hollow insulation receiving wall structure, clips arranged in spaced relation along said gap and bridging the space between said edge portions and secured thereto and independently maintaining said wall members apart in connected relation, said clips having intermediate portions inwardly bent to collectively provide a longitudinally disposed channel, a trim strip of heat insulating material spanning said gap and overlying the edges of said wall members, a backing strip of relatively rigid material on the underside of said trim strip secured thereto and extending into the space between said wall members, said relatively rigid backing strip being shaped to fit the longitudinally disposed channel formed by said clips, and means locking said backing strip and said clips together.

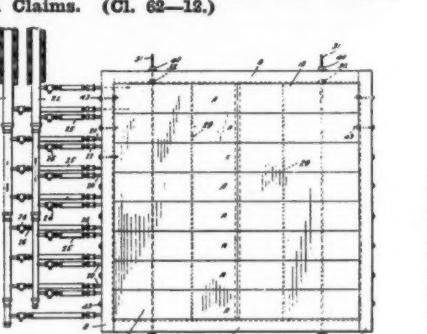
2,270,624. WATER COOLER FOR ELECTRIC REFRIGERATORS. Harry J. Clark, Philadelphia, Pa. Application March 14, 1941, Serial No. 383,400. 3 Claims. (Cl. 62-89.)

1. The combination with an electric refrigerator having a cooling unit, of a liquid container within the refrigerator insulated from the cooling unit, a filling tube extending from the top of the refrigerator, a cap closing the filling tube, and an outlet projecting from the container through the wall of the refrigerator.

2,270,738. THERMOSTATIC APPARATUS. Edwin N. Lightfoot, Wauwatosa, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis., a corporation of Delaware. Application Feb. 13, 1939, Serial No. 256,240. 8 Claims. (Cl. 200-137.)

1. In a thermostatic switch the combination of a base, an electric switch mounted on said base and having an actuator to operate the switch, a lever for operating said actuator, an adjustable abutment for said actuator on said lever, two supporting points on said base, two parallel thermoresponsive rods having different temperature coefficients of expansion and having one of their respective ends joined together, the other end of one of said rods being adjustably attached to said base, a third supporting point at the other end of said other rod, said supporting points being arranged in a triangle whose plane is substantially normal to said rods, a lever having bearing surfaces for said points, each of the surfaces forming with the respective point an open pivotal bearing, and a spring between said base and said lever and applying to the latter a biasing force in a direction substantially parallel with said rods and passing through said triangle to bias said lever toward said points.

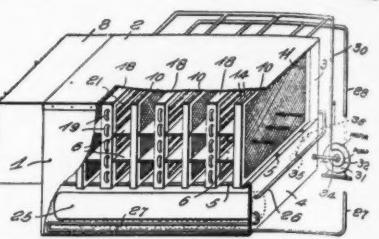
2,270,745. SKATING RINK. Newton Taylor Todd, Indianapolis, Ind. Application July 24, 1940, Serial No. 347,106. 11 Claims. (Cl. 62-12.)



1. A portable ice skating rink, comprising a plurality of horizontal panels; each of said panels including an elongated plane top plate of sheet-metal, a bottom plate of sheet metal formed with an upwardly opening retroverted channel and received beneath said top plate whereby the lower surface of the top plate and the walls of said channel define a continuous retroverted fluid passage, the side and end edges of said top plate being bent to form flanges extending downwardly past the bottom wall of said passage, and heat-insulating material substantially filling the space between the bottom plate and the lower edges of said flanges; means for holding said panels together with their upper surfaces coplanar and the flanges at the sides of successive panels abutting; supply and return headers for a cooling fluid; means for connecting the ends of the passage in each panel to said headers, respectively; and a border frame surrounding said row of panels, said border frame including a member overlying the upper surfaces of the panels at the edges of the panel row to define the edges of an ice-sheet formed by water sprayed on the coplanar upper surfaces of said panels and frozen by cooling fluid circulated through said passages.

2,270,910. CONDENSER. Genaro Amado Larriva, Tucson, Ariz. Application March 4, 1940, Serial No. 322,236. 4 Claims. (Cl. 257-65.)

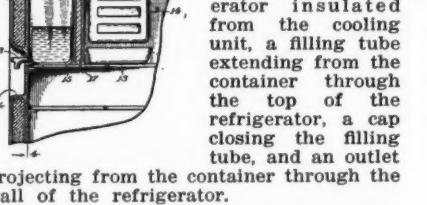
4. A condenser aid comprising in combination a casing having opposed inlet and outlet openings, a series of longitudinally extending bars mounted within said casing dividing the latter into an upper compartment and a lower liquid collecting sump, two series of vertically extending rails each mounted upon one of the interior side walls of said casing above said bars, a series of frames slidably mounted between alternate pairs of said rails in each series thereof within the upper compartment of said casing and with the frame faces thereof facing said openings, said frames being supported upon said bars above the sump of said



(Conclude)
a float for an erant in the approaches in a conn trap, a va holding sa coating wi and lowered.

2,271,010. Friedrich J. Assinger to a corporat Oct. 4, 1938. (Cl. 98-40.)

2,270,823. HEAT EXCHANGE AND VENTILATING SYSTEM. Carl E. Meyerhoefer, Brooklyn, N. Y., assignor to E. A. Laboratories, Inc., Brooklyn, N. Y., a corporation of New York. Application Dec. 9, 1938, Serial No. 244,740. 4 Claims. (Cl. 257-137.)



1. Ventilating main air supply duct, which air is from said main chamber having a portion facing tangentially rear end through said main air supply duct.

2,271,020. Joseph J. signor to C a corporat Dec. 18, 1938. (Cl. 297-8.)

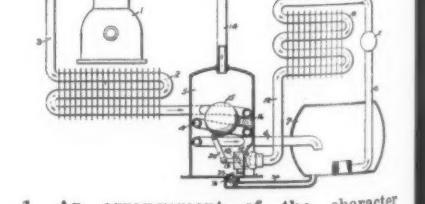
In a the cup-shaped and peripher

to provide arcuate cross aperture to wall, a cap aperture and trough-like having a di solder said capillary said depression within said aperture are

2,270,844. REFRIGERATOR. William T. Hedlund, New Rochelle, N. Y., assignor to Servel, Inc., New York, N. Y., a corporation of Delaware. Application Aug. 10, 1937, Serial No. 158,444. 4 Claims. (Cl. 62-89.)

1. In a refrigerator having a thermally insulated storage compartment, means for causing circulation of refrigerated air in said compartment, a solid shelf adapted to be supported in said compartment, said shelf having a downward extending flange at the forward edge thereof, a food drawer, said drawer and shelf having cooperating means including a structure to slidably support said food drawer on the underside of said shelf, said means cooperating so that air is prevented from flowing into and out of said drawer at its sides and rear when it is closed, and said drawer having a front adapted to overlap said flange when said drawer is in its closed position to seal the front of said drawer.

2,270,745. SKATING RINK. Newton Taylor Todd, Indianapolis, Ind. Application July 24, 1940, Serial No. 347,106. 11 Claims. (Cl. 62-12.)



1. A portable ice skating rink, comprising a plurality of horizontal panels; each of said panels including an elongated plane top plate of sheet-metal, a bottom plate of sheet metal formed with an upwardly opening retroverted channel and received beneath said top plate whereby the lower surface of the top plate and the walls of said channel define a continuous retroverted fluid passage, the side and end edges of said top plate being bent to form flanges extending downwardly past the bottom wall of said passage, and heat-insulating material substantially filling the space between the bottom plate and the lower edges of said flanges; means for holding said panels together with their upper surfaces coplanar and the flanges at the sides of successive panels abutting; supply and return headers for a cooling fluid; means for connecting the ends of the passage in each panel to said headers, respectively; and a border frame surrounding said row of panels, said border frame including a member overlying the upper surfaces of the panels at the edges of the panel row to define the edges of an ice-sheet formed by water sprayed on the coplanar upper surfaces of said panels and frozen by cooling fluid circulated through said passages.

2,270,934. CONTROL FOR REFRIGERATING DEVICES. Edward F. Dickeson, Jr., Detroit, Mich. Application Dec. 13, 1939, Serial No. 299,250. 4 Claims. (Cl. 62-8.)

1. An arrangement of the character described comprising a receiver adapted to contain a refrigerant, an evaporating coil connected thereto, valve means interposed between said receiver and said coil adapted to maintain the refrigerant in the coil at constant pressure, a trap means connecting the evaporating coil with the trap, automatic means including

(Concluded on Page 15, Column 1)

CURTIS
REFRIGERATION
AIR CONDITIONING
COMMERCIAL

Curtis Refrigerating Machine Division
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1912 Kienlen Ave.
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HEAT INTERCHANGERS

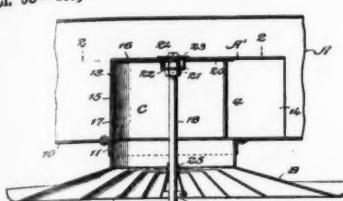
- 1—Large Surge Capacity
- 2—High Heat Hold
- 3—Sweat and Flare Fittings
- 4—Low Cost

KRAMER-TRENTON CO.
TRENTON, N. J.

Patents (Cont.)

(Concluded from Page 14, Column 5)
a float for checking the flow of the refrigerant in the trap as the liquid refrigerant approaches a predetermined height therein; a connection from the receiver to the trap, a valve therein, means normally holding said valve closed, and means coacting with the float adapted to open the valve and admit the refrigerant from the receiver into the trap when the float is lowered.

2,271,010. VENTILATING APPARATUS. Friedrich Honerkamp, New York, N. Y., assignor to Anemostat Corp. of America, a corporation of Delaware. Application Oct. 4, 1938, Serial No. 233,143. 8 Claims. (Cl. 98-40.)



1. Ventilating apparatus comprising a main air supply duct having an air outlet opening, and an auxiliary duct within said main duct defining a chamber through which air is required to pass in its flow from said main duct to said opening, said chamber having a closed, rounded rear end portion aligned with said opening and having an open, air inlet front end portion facing the direction of airflow through said main duct and disposed tangentially with respect to said closed rear end portion, whereby air flowing through said chamber to said opening has a helical motion imparted thereto.

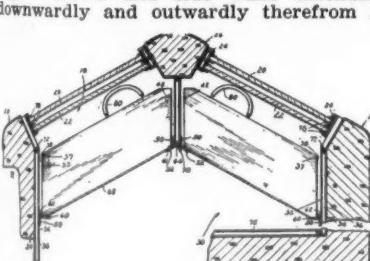
2,271,020. THERMOSTATIC UNIT. Joseph J. McMahon, Lowell, Mass., assignor to Clifford Mfg. Co., Boston, Mass., a corporation of Delaware. Application Dec. 19, 1939, Serial No. 310,005. 1 Claim. (Cl. 297-8.)

In a thermostatic unit, a generally cup-shaped metal housing having bottom and peripheral walls, a flexible diaphragm unit cooperating with said bottom and peripheral walls to provide a closed space within said housing, an aperture in said bottom wall, the metal of said bottom wall being formed

to provide a trough-like depression of arcuate cross-section extending from said aperture to the periphery of said bottom wall, a capillary extending through said aperture and along the bottom of said trough-like depression, said depression having a diameter substantially equal to the external diameter of said capillary, and solder material partially overlying said capillary throughout the length of said depression to retain said capillary within said depression and to seal said aperture around said capillary.

2,271,103. REFRIGERATED DISPLAY CABINET. Charles Q. Sherman, Mount Vernon, N. Y. Application July 29, 1941, Serial No. 404,474. 11 Claims. (Cl. 62-89.5.)

1. A refrigerated display and storage cabinet for the self-service dispensing therefrom of perishable commodities, said cabinet having a storage well and dispensing compartment directly thereabove; said cabinet arranged to provide access to the storage well through the dispensing compartment; said cabinet having a closed bottom wall and closed sides upstanding therefrom to form the storage well; said dispensing compartment of arch-like cross-sectional configuration having a crown and side walls extending downwardly and outwardly therefrom at



a selected inclination to the vertical; the side walls of said compartment arranged and constructed to provide access therethrough to the storage well and the compartment; a refrigerated plate coil in the interior of the cabinet at the said closed sides and extending therealong from the bottom wall to the dispensing compartment.

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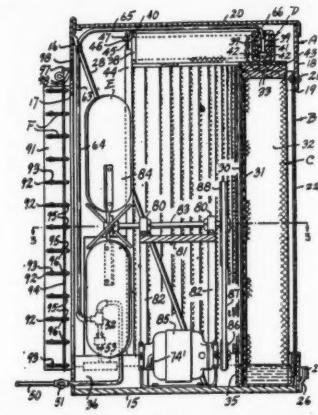
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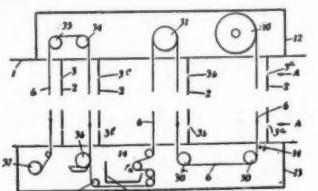
ment; a second mentioned plate coil in the interior of the cabinet extending downwardly from the crown to at least the upper part of the storage well; a plurality of trays arranged in the compartment; spaced means, for removably supporting the trays in the compartment, secured to the first mentioned and to the second mentioned refrigerating plate coils; the bottoms of said trays forming a continuous wall sealing the storage well from the dispensing compartment; said supporting means arranged to dispose the trays in the compartment substantially parallel to the side walls thereof.

2,271,342. AIR CONDITIONING AND COOLING MACHINE. Julian E. Korts, Baxter Springs, Kan. Application Feb. 5, 1940, Serial No. 317,442. 2 Claims. (Cl. 261-106.)



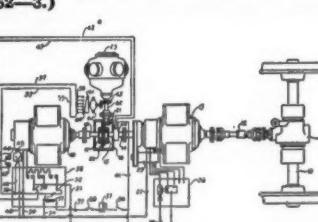
1. An air conditioning device comprising distributing means for a vaporizable liquid such as water, a lower container, an arcuate porous member for conducting the liquid from said means to the lower container, said member being formed of fabric pleated to provide substantially vertically disposed dihedral panel sections, means to supply said liquid to said distributing means, and means creating an air suction zone and an air delivery zone, one of said zones being disposed transversely of the concave side of the arcuate porous member to produce a substantially uniform draft of air thru said member.

2,271,401. APPARATUS FOR FILTERING OR CLEANING AIR OR OTHER GASES. Christopher Lawrence Sainty, London, England, assignor to Carrier Engineering Co., Ltd., London, England, a company of Great Britain. Application Oct. 25, 1940, Serial No. 362,855. In Great Britain Jan. 7, 1939. 5 Claims. (Cl. 183-75.)



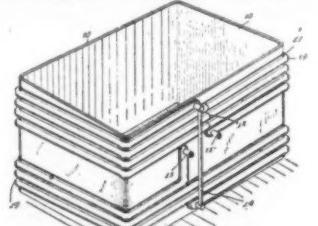
1. A filtering duct, a plurality of apertured partitions mounted transverse the duct, the apertures in the partitions providing jets to form rows of high speed streams of gas to be treated, and a baffle formation including a plurality of baffle members arranged in rear of each partition in the direction of gas flow, said baffle members comprising filtering surfaces provided to retain particles extracted from the gas flow, the filtering surfaces of successive baffle formations serving to retain particles of increasing fineness respectively, the apertures in the successive partitions in the direction of gas flow being of relatively increased restriction.

2,271,415. REFRIGERATING MEANS FOR VEHICLES. Frank B. Conlon, Dayton, Ohio, assignor, by mesne assignments, to Chrysler Corp., Highland Park, Mich., a corporation of Delaware. Application Dec. 2, 1937, Serial No. 177,685. 6 Claims. (Cl. 62-3.)



5. The improvement in the art of air conditioning comprising the combination of a railway vehicle, and a refrigerating system carried thereby, said system including a mechanical compressor carried by the vehicle, a first compressor driving mechanism including an axle of the vehicle, a second compressor driving mechanism including an electromotive device having an armature shaft, a battery carried by the vehicle and a circuit connecting said battery and said electromotive device for driving said armature shaft, a differential mechanism connected to said axle and to said armature shaft, and a power shaft driven by said differential mechanism and connected to said compressor.

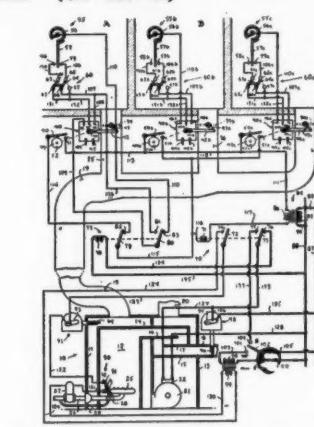
2,271,437. METHOD OF MAKING HEAT EXCHANGERS. Bennett Lewis, Indianapolis, Ind. Application Jan. 26, 1939, Serial No. 252,862. 7 Claims. (Cl. 113-118.)



1. A process of making a heat exchanger, comprising forming a plate of flexible material to provide a series of parallel ribs separated by open-topped channels, covering the open tops of said channels with a second plate engaging said ribs while leaving openings at the ends of said channels, securing said second plate

to said ribs, immersing the assembly in a bath of liquid sealing material with some of said openings at the bottom of the assembly and others at the top and with the channels extending generally vertically between the upper and lower openings whereby the liquid sealing material may enter the lower openings and fill the channels while air escapes from the upper openings, removing the assembly from the bath to drain any excess sealing material from the channels through the lower openings when air enters the upper openings, and subsequently closing said openings to leave said channels connected in series to form a continuous fluid passage.

2,271,487. ZONE AIR CONDITIONING SYSTEM. Clarence W. Nessel, Dayton, Ohio, assignor to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a corporation of Delaware. Application March 16, 1939, Serial No. 262,192. 11 Claims. (Cl. 236-9.)



1. In a fluid distributing system, in combination, a source of fluid medium supply, means for circulating fluid medium to a plurality of different regions, a condition responsive control device associated with each region and controlling the supply of fluid medium thereto so as to shut off the supply whenever said condition exceeds a limiting value, an electrical relay controlling said source of fluid medium supply and energizable in response to opening of each of said devices, means responsive to a condition at said source of fluid medium operable to control said circulating means, and means controlled by said relay for placing said last named condition responsive means in control of at least one of said devices when said relay is deenergized.

Minneapolis-Honeywell Catalog Redesigned

MINNEAPOLIS — In response to suggestions from jobbers and dealers, several changes have been made in the 1942 refrigeration catalog recently issued by Minneapolis-Honeywell Regulator Co. to make it more usable in the field. Work of the Rema and NRSJA committees on catalog standardization also was taken into consideration in planning the bulletin.

To make the catalog easier to use, each control or accessory is given a separate complete uniformly arranged listing. Bold-face descriptive title indicates the control function, and each control is pictured to make it easier to identify.

Tax status of each item also is indicated adjacent to the list price, and control ranges and electrical ratings are uniformly listed in each case. Main copy is factual in content, and includes cross-reference to the instruction and specification sheets packed with each control. Different classifications of controls are separated by page-wide captions, and pages are made up in two-column style, for easier reading.

The catalog is made up to provide ample binding space, even for counter catalog bindings, and more universal punching fits all binders to which the previous punching could be adapted, in addition to many new ones. Standard reconditioning prices, guarantee, and terms, have been added in response to dealer requests. Cover space is provided for dealer imprint.

New controls listed in the catalog are the Q89A cold location recycler, the Polartron system temperature control, and the TA420A heavy-duty Frigistat.



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Mills Condensing Units
By Mills Novelty Company
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CLASSIFIED ADVERTISING

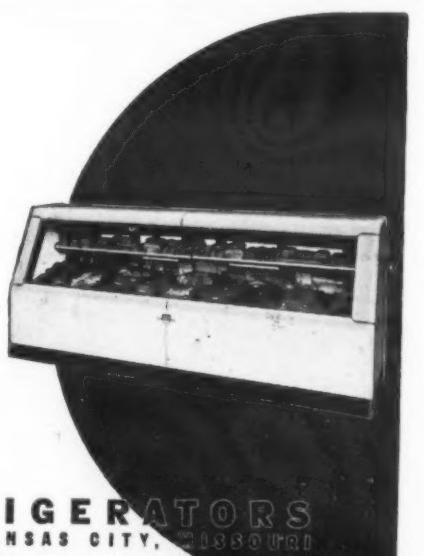
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New Memberships Reported by NRSJA; Campaign Continues Tax Exempt Sales Rules Outlined By U. S. Officials

(Concluded from Page 1, Column 1)
and Refrigeration Electric Supply Co., Columbus, Ohio.

In addition to these new memberships, Thermal Co., Inc., St. Paul, Minn., of which H. W. Small is president, has rejoined the association as a regular member, and Joseph Woodwell Co., Pittsburgh, also has become a regular N.R.S.J.A. member.

A number of other applications for both term and regular memberships in addition to those mentioned above also have been received, Mr. Borden reports, and are now being acted upon by the association.

In the interest of a "united front" for this branch of the industry, the association is continuing its offer of "term" memberships to firms which may wish to avail themselves of the organization's services, Mr. Borden said.

Term memberships are open to any refrigeration jobbing firm, not previously a member of the association, for a period of 12 months upon payment of \$30, which covers both initiation and dues. At the end of the trial period, the term member has the option of either becoming a regular member of the association, or of dropping out of the group. In the event he decides to become a regular member, no second initiation fee is required.

As a term member, the jobber is entitled to every privilege of the association, except the right to vote on matters of policy. Applications are handled in the same manner as are those for regular memberships: references are checked, inquiries are made of competitive jobbers in the area, and the applications submitted to N.R.S.J.A. directors for approval or rejection.

Inquiries concerning these memberships should be directed to National Refrigeration Supply Jobbers Association, 28 N. Clark St., Chicago.

Carrier Institutes New Regional Sales Setup

(Concluded from Page 1, Column 3)

Under the new marketing plan, the territory east of the Rocky Mountains is divided into three regions—eastern, central, and southern. Heading the central region, with headquarters in Chicago, is Arthur P. Shanklin, recently elected a Carrier vice president. Headquarters of the southern region are at present in Dallas, Tex., with operations under the direction of O. W. Bynum as manager. The three regional heads constitute an advisory council to Edward T. Murphy, vice president in charge of marketing.

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DO IT ALL WITH SQUARE D

SQUARE D COMPANY
REGULATOR DIVISION • DETROIT

Radio Manufacturers Told To Convert Or Face Dissassembly of Their Plants

(Concluded from Page 1, Column 2)

C. Sales by the prime contractor and all the subcontractors are exempt, if in each case the sale price does not include a tax imposed under Chapter 29 of the Internal Revenue Code on the sale of the article. In this example, the exemption would not apply to the rubber insulated wire if sold at a price including tax. But the fact that such wire is included at that price in the cost of the generator and the automobile would not defeat the exemption applicable to the generator and the automobile, if they are sold at a price not including a tax on the sale or transfer thereof.

2. A prime contractor engaged in the alteration and repair of a warehouse leased by the United States purchases certain refrigerating components for installation in the warehouse. The sale of the refrigerating components by the producer to the prime contractor is exempt if made at a price not including tax. In this example, the exemption would not be defeated merely because the use of the refrigerating components might ultimately inure to the lessor upon termination of the lease.

Proof of exemption is required in all cases. In the case of purchase articles and construction articles, this is to be made on Form 1094 exemption certificate, properly executed, and furnished to the prime contractor, where the purchase or construction article, or any subsidiary article to be incorporated in such article, is to be purchased on a tax-free basis. Extent of the exemption's application also must be clearly stated.

In the case of subsidiary articles, the exempt character of the sale or transfer must be evidenced by a certificate of exemption executed by the vendee and furnished to the vendor. No exemption certificate is to be issued by a prime contractor for any subsidiary article, however, without authorization by the exemption certificate issued to him; and a subcontractor is not permitted to issue such a certificate unless (1) the subsidiary article is purchased on a tax-free basis and will be included at such basis in the price charged by the subcontractor to his vendee, and (2) the subcontractor has received a certificate of exemption from his vendee certifying that the subsidiary article is destined for use in the United States under a specified government contract.

A single certificate of exemption may be given for all purchase and construction articles coming within the subject matter of a single contract, or for all subsidiary articles to be purchased under a single subcontract. In all cases, the certificate of exemption is to be given by the prime contractor or subcontractor purchasing the subsidiary article to the vendor subcontractor, where such article or another subsidiary article to be incorporated in it is to be purchased on a tax-free basis.

Accurate and complete records must be kept of all tax-free sales or transfers. A prime contractor's records shall include a copy of the contract made with the United States, the exemption certificate furnished to the prime contractor under such contract, and copies of all exemption certificates furnished by him to subcontractors. A subcontractor's records shall include the exemption certificate furnished to him by his vendee, and copies of all certificates issued by him to his vendors. Records must be preserved for at least four years from the last day of the month following the month in which the sale was made, and are open for inspection by internal revenue officers.

Debes & Co. Closes One Of Cleveland Stores

CLEVELAND—As a war time measure, Debes & Co., refrigeration equipment and supplies jobber, has announced the temporary closing of its store at 2529 Detroit Ave. It will be reopened as soon as materials and employees are again available.

In the meantime, business is continuing at Debes' east side store, 1249 E. 105th St.

Jobbers' Copper Sales Believed Restricted

(Concluded from Page 1, Column 3)
whether fabricators could ship finished parts on order (without a priority) or ordered before Feb. 7, the date the amendment became effective.

This "semi-official" interpretation declared that the term "warehouse" as used in the amendment covered the refrigeration supply jobber, who therefore would not be permitted to sell any copper or copper alloy products on orders that bore less than an A-10 priority.

Interpretation of the order is hoped for this week. The amendment reads as follows:

"M-9-a paragraph D (deliveries by all others except refiners) now reads:

"Except as otherwise specifically authorized by the Director, orders for copper from dealers and orders for copper base alloy and copper products from any brass mill, wire mill, warehouse, or foundry must be accepted and filled by them in accordance with Priorities Regulation No. 1 as the same shall be amended from time to time except that no such order shall be accepted or filled by any such person which does not bear a preference rating of A-10 or higher."

Israel Heads Ad Club

NORFOLK, Va.—Rollin H. Israel, advertising and sales promotion director of Virginia Smelting Co., has been elected president of the Norfolk Ad Club.

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